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65-3

Senate. Commerce.

Port and harbor facilities
Commission of the United States
Shipping board.



65TH CONGRESS }
3d Session }

SENATE COMMITTEE PRINT

PORT AND HARBOR FACILITIES COMMISSION
OF THE
UNITED STATES SHIPPING BOARD

LETTER TO THE CHAIRMAN
OF THE COMMITTEE ON COMMERCE
TRANSMITTING A REPORT
CONCERNING

**TWENTY-SEVEN PORTS OF THE
UNITED STATES**

Compiled by

C. E. DOBSON, Secretary
and

R. Y. PATTERSON, Assistant Chief Engineer



Printed for the use of the Committee on Commerce

WASHINGTON
GOVERNMENT PRINTING OFFICE
1919

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LETTER OF TRANSMITTAL.

UNITED STATES SHIPPING BOARD
EMERGENCY FLEET CORPORATION,
Washington, D. C., April 18, 1919.

Senator DUNCAN U. FLETCHER,
*Chairman Committee on Commerce,
United States Senate, Washington, D. C.*

DEAR SIR: I am forwarding herewith copy of a digest of the answers to questionnaires of the Port and Harbor Facilities Commission received from various ports. This supplements their report of January 11 last, which was printed for the use of your committee. Accompanying it is a letter of transmittal from the chairman of the commission, which is self-explanatory.

This digest has been carefully edited and brought up to date by the commission. We understand that you desire to have it published, on account of the valuable information contained therein, for which there is present demand.

Very truly, yours,

JAMES V. CONVERSE,
Assistant Secretary.

LETTER OF SUBMITTAL.

UNITED STATES SHIPPING BOARD
PORT AND HARBOR FACILITIES COMMISSION,
Washington, April 21, 1919.

DIGEST OF QUESTIONNAIRE ANSWERS ON PORTS.

Mr. J. V. CONVERSE, Assistant Secretary,
United States Shipping Board Emergency Fleet Corporation,
Washington, D. C.

DEAR SIR: Complying with your request, I am forwarding herewith copy of a digest of the answers to a questionnaire which was sent to the principal ports of the country several months ago.

This digest was originally prepared for the use of the engineering department of this commission and was not intended for publication, but it is my understanding that the trustees desire to forward it to the Commerce Committee of the Senate that it may be printed as a public document, on account of the present demand for the information contained therein.

In preparing this digest, the answers have been checked against such other data as were available covering the ports, and obvious errors eliminated; also information requested which was not supplied, and certain information entered under "Remarks," was obtained from other sources, notably reports of the Chief of Engineers, United States Army, and "Ports of the United States" and "Statistical Abstract," issued by the Department of Commerce. But, in the main, statements contained in the answers to the questionnaires, which were prepared by the local port authorities or chambers of commerce, were taken as accurate. The digest sheets for each port (except in four instances) have been checked by the local authorities since March 1, 1919, and corrected or amplified by them. It was intended that our engineers should check these answers by personal inspection of the ports. We have not been able to have this done, and can, therefore, give these figures only as our careful compilation of information and of answers received, checked as indicated above.

There are some principal ports not included in this digest for the reason that full information regarding them is not yet at hand.

Very truly, yours,

UNITED STATES SHIPPING BOARD
PORT AND HARBOR FACILITIES COMMISSION,
W. M. BLACK, *Major General,*
Chief of Engineers, United States Army, Chairman.

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PORT AND TERMINAL FACILITIES, ASTORIA, OREG.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Thirty-foot depth at mean lower low tide.

Tidal range at entrance, 8 feet; within harbor, 8.5 feet.

Distance from the ocean, 10 miles.

At the mouth of the Columbia River (Columbia River Bar) the entrance channel has a depth of 41 feet for a width of 2,500 feet at mean lower low water.

2. BERTHING CAPACITY IN LINEAR FEET.

The total berthing capacity of the several wharves available is 7,839 linear feet, with a depth of water ranging from 30 to 65 feet at low tide. Floor space of wharves, 1,038,547 square feet. A new pier, 2,000 feet long, equipped with modern cargo handling machinery, and with deep water alongside, is now under construction. On it will be constructed a 1,500-foot freight shed, connected with the Spokane, Portland & Seattle Railway and the Harbor Belt Line Railway.

3. NAMES OF RAILROAD LINES SERVING PORT.

Spokane, Portland & Seattle Railway Co.

Lewis & Clarke Railway.

Harbor Belt Line Railway.

Track storage is being provided for 400 cars.

4. DRY-DOCKING FACILITIES.

A marine railway of 4,000 tons lifting capacity is now under construction, "and a 15,000-ton floating dry-dock is authorized."

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

There are 20 square miles of anchorage available with a depth at mean low water of 24 to 70 feet, and 7½ square miles with a depth of from 30 to 70 feet at mean low water.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Fresh spring water for boiler and drinking purposes may be obtained in any quantity on a basis of 15 cents per 1,000 gallons in 40,000-gallon units.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Pacific Power & Light Co., Astoria, furnishes electric current produced at their main plant located at and operated by the Hammond Lumber Co. and from an auxiliary plant at the foot of Astor Street. Alternating current, 3-phase, 60-cycle, 2,300 volts. They have a quantity of 5,000 kilowatt generating capacity, and are now arranging for a new plant to produce 5,000 additional kilowatts.

8. COALING FACILITIES.

The port of Astoria owns and operates coal bunkers which have three bins with a capacity of 1,000 tons each and which discharge coal on an apron belt conveyor to the ship at a rate of 175 tons per hour. Unloading from ships or barges is done by locomotive cranes having an unloading capacity of 60 to 75 tons per hour each. Open storage is available to the extent of 20,000 tons.

9. FUEL-OIL FACILITIES.

Fuel oil for the district is handled by the Standard Oil and the Union Oil Companies, who have two storage tanks each, with a capacity of 5,000 barrels per tank. There are no underground tanks, floating equipment, or loading heads.

10. CRANE AND DERRICK FACILITIES.

The port of Astoria owns three locomotive cranes of 50, 40, and 30 tons capacity; also one electric derrick with a 20-ton lifting capacity. There are no magnet cranes or floating derricks.

11. STEAMSHIP LINES AT PRESENT USING PORT REGULARLY.

Name of company.	Destination.
Pacific Coast Steamship Co.....	Seattle, Wash.
San Francisco & Portland Steamship Co.....	San Francisco, Calif.
McCormick Line.....	San Francisco, Calif.
J. R. Davenport.....	San Francisco, Calif.
H. R. Hanify Co.....	San Francisco, Calif.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

There is one grain elevator owned and operated by the port of Astoria with a capacity of 1,200,000 bushels, loading-out capacity of 15,000 bushels per hour either to ship or cars. Unloading capacity of 40 cars per day. The rates for the storage of handling bulk grain are as follows: \$1 per ton wharfage, which includes all handling charges and 30 days free storage; 20 cents per ton delivery to ship's side; 25 cents per ton delivery to cars; 15 cents per ton per month or fractional part thereof for storage.

Construction has been authorized of an additional grain elevator with storage capacity for 1,000,000 bushels, to be ready for the grain crop of 1919.

The grain inspection department of Oregon has charge of the inspection of all shipments of grain and maintain a laboratory at this plant.

13. VESSEL CLEARANCES.

	Total number of vessels cleared.		Total net tonnage clearances.	
	Foreign.	Coast-wise.	Foreign.	Coast-wise.
Calendar year 1914.....	24	1,311	64,892	1,367,376
Calendar year 1917.....	29	910	29,901	1,157,823

(Astoria is port of entry for all Columbia and Willamette River ports.)

14. REMARKS.

Astoria is a fresh-water port. Its principal business is in lumber, canned goods, and grain. It is an enterprising and growing port.

PORT AND TERMINAL FACILITIES, BALTIMORE, MD.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Channel to sea, 600 feet wide, 35 feet deep. Tidal range at entrance and within harbor, 15 inches. Port is 11 miles up Patapsco River from Chesapeake Bay; 151 miles from Atlantic Ocean.

2. BERTHING CAPACITY IN LINEAR FEET.

There is 27½ miles of wharf room, with 35-foot depth at piers which handle overseas trade and 24 to 30 feet at piers which handle coastwise trade. The municipal piers are as follows:

	Average length (feet).	Area (square feet).
Calvert Street.....	69	832
Pier 1.....	551	82,108
Pier 2.....	638	127,163
Pier 3.....	772	153,362
Pier 4.....	927	178,875
Pier 5.....	1,150	245,574
Pier 6.....	1,450	218,797
Pier 7.....	400	40,000
Pier 8.....	500	65,000
Center Pier.....	595	80,000
Broadway Pier.....	500	75,000
Total.....		1,267,036

The Baltimore & Ohio Railway has at Locust Point piers for general traffic, as follows:

Pier No.—

- 1, 500 by 40 feet; covered; 13 feet water alongside.
- 2, 725 by 88 feet; covered; 400 by 108 feet; covered; 30 feet water alongside.
- 3, 600 by 50 feet; open; 30 feet water alongside.
- 5, 802 by 122 feet; open; 30 feet water alongside.
- 6, 966 by 136 feet; covered; 30 feet water alongside.
- 7, 308 by 47 feet; covered; 27 feet water alongside.
- 8, 932 by 138 feet; covered; 30 feet water alongside.
- 9, 803 by 138 feet; covered; 30 feet water alongside.
- 10, 302 by 41 feet; covered; 28 feet water alongside.

Sugar House Pier. 702 by 73 feet; covered; 35 feet water alongside.

It has warehouse storage space of 763,148 square feet in addition to these piers.

The Pennsylvania Railway has at Canton piers for general traffic, as follows:

Pier No.—

- 1, 160 by 26 feet; open; 10 to 15 feet water alongside.
- 2, 501 by 67 feet; covered; 23 feet water alongside.
- 3, 927 by 120 feet; covered; 25 to 28 feet water alongside.
- 4, 929 by 103 feet; covered; 20 to 22 feet water alongside.
- 5, 500 by 35 feet; open; 18 to 25 feet water alongside.
- 6, 930 by 118 feet; covered; 28 to 30 feet water alongside.
- 7, 930 by 50 feet; open; 26 to 32 feet water alongside.

Ore pier, 1,204 by 64 feet; open; 30 feet water alongside.

It has warehouse storage space of 451,272 square feet in addition to these piers.

The Western Maryland Railway has one covered pier, 836 feet long by 122 feet wide. One open pier, 830 feet long by 62 feet wide, which has 4 tracks and is equipped with locomotive cranes. Both piers have 30 feet of water alongside.

This company has pontoon bridges for transferring cars on barges, and storage capacity at Port Covington for 2,000 freight cars.

It has warehouse storage space of 400,000 square feet in addition to these piers.

The Canton Railroad has piers for general traffic, as follows:

Pier No.—

- 1, 100 by 80 feet; covered.
- 2, 60 by 80 feet; covered.
- 3, 825 by 150 feet; covered; 28 to 33 feet water alongside.
- 4, 200 by 80 feet; 6 stories high; 250 by 80 feet; 2 stories high; 30 feet water alongside.
- 5, 1,000 by 77 feet; open ore pier; 35 feet water alongside.
- 6, 200 by 80 feet; covered; 30 feet water alongside.
- 7, 250 by 80 feet; covered; 3 stories high; 30 feet water alongside.
- 8, 500 by 100 feet; covered; 25 feet water alongside.

The piers and docks of this company are superstructed and electric lighted. There is a new reinforced concrete warehouse, 6-story, 200 by 80 feet, with modern equipment. There is another dock under construction, 1,400 by 200 feet. This company's property is connected by its own railroad, 14 miles of track, with all railroads entering the port.

Railroads have a total track storage capacity for 13,250 cars.

3. NAMES OF RAILROAD LINES SERVING PORT.

Baltimore & Ohio Railroad.
 Pennsylvania Railroad.
 Western Maryland Railroad.
 Maryland Electric Railway Co.
 Maryland, Pennsylvania Railroad Co.
 Washington-Baltimore & Annapolis Electric Co.
 Municipal Railway (local).
 Canton Railroad.
 Chesapeake & Curtis Bay Railroad.

4. DRY-DOCKING FACILITIES.

Charles L. Rohds & Sons Co., two floating docks (one 1,400 and one 500 tons).

Baltimore Dry Docks & Shipbuilding Co. has two dry docks, as follows: Upper dock, length over all, 628 feet; width of entrance at bottom, 60 feet; depth of water over sill at low water, 22½ feet. Lower dock, length over all, 483 feet; width of entrance at bottom, 50 feet; depth over sill at low water, 22½ feet.

Booz Bros. have railway dry dock 265 feet long, capacity 1,800 tons.

Bethlehem Shipbuilding Corporation has at Sparrows Point a 20,000-ton floating dry dock completed March 4, 1919.

William E. Woodall & Co., one floating dock, 200 feet by 75 feet.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

There are 5 anchorage areas available within the harbor, with a total of 2,127,175 square feet of 24-foot and 7,920,000 square feet of 35-foot anchorage.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

"Unlimited quantity of fresh water from city mains for boiler and drinking purposes."

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Consolidated Gas, Electric Light & Power Co. furnish electric power produced at McCalls Ferry and Westport power house, both alternating and direct current; single and 3 phase, 120-240 volts. Primary power 13,200 volts, 3-phase, 25-cycle.

8. COALING FACILITIES.

Baltimore & Ohio Railroad: Pier 1, 400 by 39 feet, capacity 4,500 tons per day; depth of water 20 feet on each side; 5 chutes on one side, 4 on the other. Pier 2, 146 by 35 feet, 2 chutes each side, capacity 900 tons per day, depth of water 12 feet on each side. Curtis Bay pier, 700 by 116 feet, vessels loaded on either side by car dumpers, conveying belts and tower with shuttles; capacity 4,000 to 6,000 tons per hour, 35 feet of water alongside. Old coal pier 804 by 70 feet, 24 pockets on each side, capacity 1,200 tons per hour, 30 feet of water alongside.

Pennsylvania Railway has a mechanically operated pier at Canton, 935 by 66 feet, capacity 6,000 tons in 10 hours, with 32 to 35 feet of water alongside.

The Western Maryland Railroad has a pier 729 feet long, 20 chutes on each side, capacity 7,500 tons in 10 hours, 30 feet of water alongside. There are rapid coaling machines for bunkering alongside ships.

9. FUEL OIL FACILITIES.

"Fuel oil from storage tanks is conveyed to vessel by pipe lines running along the wharf and connecting up the vessel pipes." Storage capacity, 427,565 barrels; bunkering capacity, 9,000 barrels per hour.

10. CRANE AND DERRICK FACILITIES.

One Gantry crane of 30 tons capacity, property of Canton Railroad, electrically operated without magnet.

There are 13 derricks, 11 with magnets:

Pennsylvania Railroad, 6 derricks, 5 magnets.

Baltimore & Ohio Railroad, 2 derricks, 2 magnets.

Western Maryland Railroad, 2 derricks, 2 magnets.

Canton Railroad, 3 derricks, 2 magnets.

They vary from 15 to 40 tons capacity. They are not floating derricks.

11. STEAMSHIP LINES AT PRESENT USING PORT REGULARLY.

COASTWISE AND BAY BOAT LINES.

Name of company.	Destination.
Baltimore & Carolina Steamship Co. ¹	Georgetown and Charleston.
Baltimore, Chesapeake & Atlantic and Maryland, Delaware & Virginia Ry. Companies.	Bay and river ports of Maryland and Virginia, and Washington.
Baltimore & Philadelphia Steamboat Co.....	Philadelphia via Chesapeake & Delaware Canal.
Baltimore Steam Packet Co. (Old Bay Line)....	Norfolk.
Bull Line.....	Florida.
Chesapeake Steamship Co.....	Norfolk; Richmond, via West Point, Virginia, & Southern Railroad.
Merchants & Miners Transportation Co.....	Providence, via Newport News and Norfolk. Jacksonville via Savannah.
New York & Baltimore Transportation Line....	New York.
Tolchester Co.....	Bay and River ports of Maryland.
Union Sulphur Co. Line.....	Texas.

FOREIGN TRAFFIC.

American Hawaiian Line.....	South America.
Atlantic Fruit Co.....	Jamaica and Cuban ports.
Atlantic Transport Co.....	Havre.
Atlantic Transport Line.....	London.
Creole Line.....	Mediterranean ports.
Cuban Distilling Co.....	Cuba.
Donaldson Line.....	Glasgow.
Earn Line.....	Cuba.
Furness Line.....	Leith.
Garland Line.....	Liverpool.
Gulf Refining Co.....	Mexico.
Holland-American Line.....	Rotterdam.
Johnston Line.....	Liverpool.
Lord Line.....	Cardiff, Dublin, and Belfast.
Munson Line.....	Habana and Colon.
Petroleum Transport Co.....	Mexico.
Scandinavian-American-Mexican Line.....	Copenhagen and Christiania.
Standard Oil Co.....	Mexico.
United Fruit Co.....	Jamaica and San Domingo.
United States Asphalt Refining Co.....	Tuxpan and Tampico.

¹ Freight only.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

Rate of handling, 75,000 bushels per hour.

Baltimore & Ohio Railroad Co., 2 on water front, 28 to 33 feet water alongside;

One at Mount Clare: Combined capacity, 2,750,000 bushels.

Pennsylvania Railroad Co.: Elevator No. 1, 32 feet water alongside, capacity 500,000 bushels; elevator No. 2, 250,000 bushels (inland); elevator No. 3, capacity 1,000,000 (destroyed by fire), concrete storage bins (not destroyed), 1,000,000 bushels. (To replace No. 3 a new elevator, 5,000,000 bushels, has been started.)

Western Maryland Railroad Co. water-front elevator 2,000,000 bushels capacity, 30 feet water alongside.

Total grain storage capacity, 6,500,000 bushels.

13. VESSEL CLEARANCES.

	Total number of ves- sels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise. ¹	Foreign.	Coastwise. ¹
Fiscal year ending June 30, 1914.....	799	(²)	3,573,602	30,418
Fiscal year ending June 30, 1918.....	746	339	4,838,803	993,975

¹ Coastwise does not include domestic or bay traffic.

² Unknown.

14. REMARKS.

The harbor of Baltimore is under jurisdiction of the harbor board, which is appointed by the mayor. This board controls 6 miles of municipal wharves and directs all wharf and harbor activities. They estimate that 100 per cent additional traffic approximately of the same character as they are now receiving can be handled with existing facilities at Baltimore; and that three times the present coal business can be handled.

The greater part of the freight is handled from rail to ship direct; but some is unloaded into covered piers, and thence to ship. A small portion is lightered to ship side.

The harbor board has two ice boats which keep the harbor open all winter. Two fire boats and the police tug are continually on duty. Goods are transferred across the harbor by floats and by municipal ferry. There are wide water-front highways encircling the harbor, and a municipal belt line railroad links up wharves and front with piers.

PORT AND TERMINAL FACILITIES, BOSTON, MASS.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

The entrance to Boston Harbor through North Channel from Broad Sound has a depth at mean low water of 35 feet. The depth in President Roads varies from that depth to 60 feet at mean low water, and the channel connecting it with the principal piers and wharves along the harbor front has also a depth of 35 feet at mean low water.

There is no entrance bar to Boston Harbor, the channel being direct from the harbor to the sea, a distance of about 8 miles from the principal piers and wharves.

The average tidal range within the harbor is 9.8 feet.

2. BERTHING CAPACITY IN LINEAR FEET.

Boston & Albany Railroad: Grand Junction wharves, 6 berths, 35 feet depth.

Boston & Maine Railroad: Mystic wharf, 2 berths, 29 feet depth; 2 berths, 30 feet depth; 3 berths, 35 feet depth.

Boston & Maine Railroad: Hoosac Tunnel docks, 2 berths, 27 feet depth; 3 berths, 30 feet depth; 1 berth, 32 feet depth; 1 berth, 35 feet depth.

New York, New Haven & Hartford Railroad: South Boston docks, 6 berths, 30 feet depth.

Navy Department: Commonwealth Pier No. 5, 5 berths, 40 feet depth.

Boston Army supply base: 8 berths, 30 feet depth (under construction).

3. NAMES OF RAILROAD LINES SERVING THE PORT.

Boston & Maine Railroad.

Boston & Albany Railroad.

New York, New Haven & Hartford Railroad.

Union Freight Railroad (local).

Boston, Revere Beach & Lynn, is a narrow-gauge passenger line running from Boston to Lynn, Mass.

4. DRY DOCKING FACILITIES.

The Atlantic Works:

Marine Railway No. 1, 1,000 tons.

Marine Railway No. 2, 2,000 tons.

Marine Railway No. 3, 500 tons.

Commonwealth Dry Dock (under construction):

Graving Dock, 1,170 feet long, 114.75 feet wide at the bottom, 35 feet depth of water over the sill at mean low water.

Richard T. Green Co. (Inc.):

Marine Railway No. 1, 2,250 tons.

Marine Railway No. 2, 600 tons.

Marine Railway No. 3, 250 tons.

Marine Railway No. 4, 1,500 tons.

Simpson's Patent Dry Dock Co.:

Graving Dock, wood construction, No. 1, 465 feet long, 49.3 feet wide, 9.5 feet depth of water over the sill at mean low water.

Graving Dock, wood construction, No. 2, 163 feet long, 34 feet wide, 7.5 feet depth of water over the sill at mean low water.

Graving Dock, wood construction, No. 3, 256 feet long, 28 feet wide, 3½ feet depth of water over the sill at mean low water.

Boston Navy Yard, United States Navy:

Graving Dock No. 1, 389 feet long, 60 feet wide, 25 feet depth of water at high water, ordinary spring tide.

Graving Dock No. 2, 750 feet long, 101.5 feet wide, 30 feet depth of water at high water, ordinary spring tide.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

	Approximate areas (acres).	Depth of water, in feet, at mean low water.
Upper harbor:		
North of north ferry		35
Between north and south ferries.....		35
Opposite Cunard docks.....		35
Yacht anchorage.....	10	20
Bird Island anchorage.....	145	30
South Boston anchorage.....	70	18-6
Lower harbor:		
Between Castle and Spectacle Islands.....	65	30-20
President Roads.....	400	60-30
Nantasket Roads—		
Between Peddocks and Rainsford Islands.....	540	30
Between Rainsford and Long Islands.....	120	25
Boston Hull and Gallups Island.....	250	35
	1,600	.....

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

There is an unlimited supply of pure water available at all the piers and wharves. This water is of the best quality, both for drinking purposes and for use in the boilers.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

There is available a sufficient supply of electricity for all purposes. In general, the electric current is supplied by the Edison Electric Illuminating Co., of Boston, at an E. M. F. of 440 volts, 3-phase, 60-cycle, alternating current for power and 110-220 volts, single-phase, 60-cycle, alternating current for lighting.

At the Hoosac Tunnel and Mystic docks, however, the electric current is supplied from the power plant of the Boston & Maine Railroad at an E. M. F. of 2,300 volts, and is then transformed to 440 volts, 3-phase, 60-cycle, alternating current for power and 110-220 volts, single-phase, 60-cycle, alternating current for lighting.

8. COALING FACILITIES.

There are at the present time good facilities in Boston Harbor for bunkering ships. There are four coal companies which are equipped to supply bunker coal, and they have storage capacity for about 300,000 tons, with ample lighterage facilities.

9. FUEL-OIL FACILITIES.

The plant of the Mexican Petroleum Oil Co., located on Chelsea Creek, has ample facilities for furnishing oil for bunkering purposes to ships drawing 21 feet of water or less. They have two wharves, each 60 feet long, and 20 feet wide; docking space 900 linear feet; boats being tied up to dolphins; depth of water 25 feet at mean low water; storage capacity consists of four 55,000 barrel tanks. Tanks

connected with wharves by pipe line 10 inches in diameter, arranged that two boats may be loaded or unloaded at one time. Oil is pumped to the oil storage tanks from the ships by the ship's pumps. The oil loading apparatus consists of two steam pumps located at the power station on the property.

Capacity for loading boats is 1,500 barrels per hour.

10. CRANE AND DERRICK FACILITIES.

Boston Harbor has numerous floating derricks of various kinds and sizes, up to 40 tons' lifting capacity.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

Lines and services.	Berths.	Number of sailings for year ending Nov. 30, 1914.
American and Indian Line from Calcutta and East Indies.	Mystic terminal of Boston & Maine R. R., Charlestown.	44
Barber Line from South American ports.	Commonwealth Pier, South Boston.	12
Chalk Line from London.	Mystic terminal of Boston & Maine R. R., Charlestown.	5
Clay Line from Fowey, England.	do.	11
Cunard Line to Liverpool and London and Glasgow.	Boston & Albany R. R. terminal, East Boston.	22
Eastern Steamship Corporation, Yarmouth Line to Yarmouth, Nova Scotia. ¹	Central Wharf, Atlantic Avenue, city proper.	177
Leyland Line to Liverpool. ²	Boston & Albany R. R. terminal, East Boston.	36
Leyland Line to Manchester.	do.	20
Leyland to London.	Hoosac terminal of Boston & Maine R. R., Charlestown.	26
Norton Line from South American ports.	National Docks & Storage Warehouse Co., East Boston.	1
Porto Rico Line from Porto Rico.	American Sugar Refining Co., South Boston.	5
United Fruit Line to Habana and Central America.	Long Wharf, Atlantic Avenue, city proper.	52
United Fruit Line from West Indies.	do.	90
Warren Line to Liverpool. ²	Hoosac terminal of Boston & Maine R. R., Charlestown.	24
White Star Line to the Mediterranean. ²	Boston & Albany R. R. terminal, East Boston.	13
Wilson Line from Hull. ²	Mystic terminal of Boston & Maine R. R., Charlestown.	26
Boston & Gloucester Line to Gloucester, Mass. ²	Central Wharf, Atlantic Avenue, city proper.	396
Clyde Line to Charleston, S. C., and Jacksonville, Fla.	Lewis Wharf, Atlantic Avenue, city proper.	71
Eastern Steamship Corporation, Bangor Line to State of Maine ports. ²	India Wharf, Atlantic Avenue, city proper.	234
Eastern Steamship Corporation, Metropolitan Line to New York. ²	Union & India Wharves, Atlantic Avenue, city proper.	195
Eastern Steamship Corporation, Portland Line to Portland, Me. ²	Central Wharf, Atlantic Avenue, city proper.	310
Maine Coast Line to State of Maine ports.	Commercial wharf, Atlantic Avenue, city proper.	37
Merchants & Miners Line to Norfolk and Newport News.	New York, New Haven & Hartford R. R. terminal, South Boston.	156
Merchants & Miners Line to Philadelphia. ²	do.	156
Merchants & Miners Line to Norfolk, Va. ²	do.	156
Savannah Line to Savannah, Ga.	Pier 42, Hoosac Dock, Charlestown.	111

¹ Carries passenger as well as freight.

² Report of the directors of the port of Boston upon the use of water terminals and railroad connections, January, 1914, Massachusetts, H. Doc. 2091.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

Boston & Albany Railroad:

Total capacity of grain elevator 1,017,191 bushels; 700,000 to 800,000 bushels working capacity.

Rate of loading from cars to elevator, 15,000 bushels per hour.

Rate of unloading from elevator to ship, 20,000 bushels per hour on each side of the pier.

Boston & Maine Railroad, "Hoosac Tunnel Docks":

Total capacity, 1,000,000 bushels, with working capacity of 850,000 bushels.

Rate of loading from cars to elevator, 8,000 to 10,000 bushels per hour.

Rate of unloading from elevator to ships, 10,000 bushels per hour.

Boston & Maine Railroad, "Mystic Wharf":

Total capacity 420,000 bushels, with working capacity of 350,000 bushels.

Rate of loading from cars to elevator, 8,000 bushels per hour.

Rate of unloading from elevator to ships is 6,000 to 12,000 bushels per hour.

Commonwealth of Massachusetts:

One floating grain elevator, the *Ellen M. Golder*; built about 1873; length 152.5 feet; beam 35 feet; depth 17.1 feet; net tonnage 619; capacity about 24,000 bushels; operated by steam; contained on a craft, with no power for locomotion.

13. VESSEL CLEARANCES.

	Total number of vessels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Fiscal year ending June 30, 1914.....	1, 133	2, 060	2, 185, 718	(¹)
Fiscal year ending June 30, 1918.....	626	1, 280	1, 026, 693	(¹)

¹ No record.

14. REMARKS.

The port is under the control of a board known as the directors of the port of Boston. This board consists of three members appointed by the governor with the advice and consent of the governor's council (State legislature). The governor designates one member as chairman, and another as secretary. Each member is required to devote his entire time to the work of the board, and each receives an annual salary of \$6,000. The term of the office is three years, arranged so that the term of one member shall expire each year. The directors may employ such engineers, clerks, agents, or assistants as they may deem necessary to carry out the duties of their commission.

PORT AND TERMINAL FACILITIES, BRUNSWICK, GA.**1. CONTROLLING DEPTH OF WATER TO THE SEA.**

On the bar, 20.7 feet, 200 feet wide, at mean low water.

Brunswick Point, 24 feet, 400 feet wide, at mean low water.

East River, 22 feet, 200 feet wide, at mean low water.

Academy Creek, 13.5 feet, 200 feet wide, at mean low water.

Turtle River, 23 feet, 175-200 feet wide, at mean low water.

Tidal range at entrance bar, 6.6 feet.

Tidal range within harbor, 7 feet.

Average distance of terminals from open sea, 7 miles; the farthest being the Southern Railway Export Docks, which are 12 miles. (These distances are evidently figured only through St. Simons Sound; there is about 7 miles distance outside, the greater part through a dredged channel, before deep water in the open sea is reached.)

2. BERTHING CAPACITY IN LINEAR FEET.

	Feet.
Piers assigned to overseas traffic.....	3,470
Piers assigned to coastwise traffic.....	11,160
Piers assigned to local or harbor traffic.....	490
Total linear feet of berthing space.....	15,120

	Location.	Linear feet.	Depth. (feet).
Overseas piers:			
Southern Ry., Turtle River Dock	North end Turtle River.....	1,800	27
Atlanta, Birmingham & Atlantic Ry. Basin.	Atlanta, Birmingham & Atlantic ter- minals.	1,670	17
		3,470	
Coastwise piers:			
Southern Ry., Turtle River Dock	North end Turtle River.....	150	27
Atlanta, Birmingham & Atlantic Ry. Basin.	Atlanta, Birmingham & Atlantic ter- minals.	1,600	17
Atlantic Coast Line R. R. Docks	Fronting Academy Creek and East River.	2,930	20-25
Georgia Creosoting Dock.....	Fronting East River.....	1,200	17-25
F. D. Aiken's Dock.....	Fronting Academy Creek.....	725	22
Downing Co. Dock.....	Fronting East River.....	495	
Savannah River Lbr. Co.....	Fronting Back River.....	350	
Coney & Parker Dock.....	Fronting East River.....	225	
Piers D and E at Atlanta, Birmingham & Atlantic terminals.	.....do.....	2,505	
Southern Ry., Mansfield Dock.....	.....do.....	980	25
		11,160	

3. NAMES OF RAILROAD LINES SERVING PORT.

Southern Railway Co.; Atlanta, Birmingham & Atlantic Railway Co.; Atlantic Coast Line Railroad; Georgia Coast & Piedmont Railroad. All piers and wharves have tracks at ship side permitting transfer from rail to ship. Physical connection with railroads maintained so that cars can be interchanged to all wharves.

4. DRY DOCKING FACILITIES.

There are no dry docks in Brunswick Harbor. The Brunswick Marine Construction Corporation operates a marine railway with a lifting capacity of 900 tons.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

Anchorage areas are: $2\frac{1}{2}$ square miles, 30 to 87 feet deep; $7\frac{1}{2}$ square miles, 20 to 30 feet deep; $12\frac{1}{2}$ square miles, 10 to 20 feet deep; all at mean low water, with rise of tide of 7 feet. (However, controlling depth of 23 feet at mean low water, or 30 feet at mean high water, will not permit use of anchorages, at present, by vessels drawing over 29 or $29\frac{1}{2}$ feet.)

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Water is obtained from artesian wells, is absolutely germless, and is excellent for drinking purposes. It contains $1\frac{1}{2}$ pounds of scale-forming solids per 1,000 gallons. Local industries use filters and boiler compounds.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Six hundred and fifty horsepower available; alternating voltage, 2,300, 220, 110, 3-phase, 60-cycle, 24-hour service. Mutual Light & Water Co.

8. COALING FACILITIES.

There is coal supply for ships in limited quantities, and facilities for bunkering by lighters.

9. FUEL OIL FACILITIES.

There are no oil bunkering facilities at Brunswick. The Standard Oil Co., the Texas Co., and the Gulf Refining Co. operate retail supply depots.

The Atlantic Refining Co. is building a large petroleum refinery, which it is planned to have in operation by August, 1919. It will be located on the Turtle River, immediately north of the Southern Railway export docks, and will have over one-half mile of docks for fueling ships.

10. CRANE AND DERRICK FACILITIES.

There are three floating derricks on lighters 18 by 40 feet, of sufficient size for hoisting engine, of capacity of $1\frac{1}{2}$ tons each.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

Strachan Lines, to United Kingdom and Continent.

Leyland Lines, to Liverpool.

Harrison Line, to Liverpool.

Creole Line, to Italian and Spanish ports.

International Mercantile Marine, to various ports.

Atlantic, Gulf & West Indies Steamship Co. (Clyde Line), to New York.

The South Atlantic Maritime Corporation is arranging to establish service to the West Indies, Central and South America.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

Brunswick has no grain elevators.

13. VESSEL CLEARANCES.

	Total number of vessels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Fiscal year ending June 30, 1914.....	60	213	106,667	287,913
Fiscal year ending June 30, 1918.....	38	83	20,403	128,629

14. REMARKS.

Under normal conditions Brunswick's commerce has grown steadily with the improvement of its harbor, which is well located and commodious. The export trade comprises about one-third of the business of the port, the balance being mainly coastwise, as its import business is small. The principal items of export are cotton, naval stores, and lumber. Transfer is direct from rail to ship. There is railroad track storage for 1,000 cars.

The port is under the control of the municipality, and it has power to acquire water-front property and construct terminals. As yet it has not exercised these powers to any great extent.

The Brunswick Board of Trade suggests either an extension of the Southern Railway's Turtle River Export Docks, or a new export terminal on Turtle River south of the export docks, to either of which tracks could be laid from existing connections and the construction and operation made economical. This extension or new development would provide a very convenient location for coaling facilities.

PORT AND TERMINAL FACILITIES, CHARLESTON, S. C.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Charleston is situated on Charleston Bay, at the confluence of the Cooper and Ashley Rivers, about $7\frac{1}{2}$ miles from the ocean. The depth of the dredged channel to the city is 30 feet at mean low water. The mean range of tide is 5.2 feet in harbor.

2. BERTHING CAPACITY IN LINEAR FEET.

	Piers.	Length.	Depth of water.	Number of berths.
		<i>Feet.</i>	<i>Feet.</i>	
Clyde Steamship Co.....	3	420	19-30	4
Seaboard Air Line Ry.....	1	800	23-30	2
Southern Ry. No. 1.....	1	340	5-35	(1)
Southern Ry. No. 2.....	1	417	0-30	(1)
Southern Ry. No. 3.....	1	421	0-30	(1)
W. G. McCabe & Co.....	(2)	400	26	2
Charleston Terminal Co.....	}	2,200	30	5
Columbus Street Wharf.....				
Oakdene Cotton Compress.....	(2)	750	24	2
Port Terminal, Quartermaster Dock.....	(2)	2,160	30	5
Port Terminal, Ordnance Dock.....	(2)	680	30	2

¹ Needs dredging.

² Bulkhead.

NOTE.—It is stated that the shallowness in some of these docks is caused by silt from the river, and is easily removed; that a few days' work of a dredge in each dock could increase the depth to that prevailing at the pierhead.

The various terminals afford a total covered pier area on Cooper River of 1,500,000 square feet. The storehouse facilities along Cooper River afford a combined storage capacity of 835,000 square feet. The United States quartermaster depot has storage space of 1,795,000 square feet; the ordnance depot, 470,000 square feet.

3. NAMES OF RAILROAD LINES SERVING PORT.

The Atlantic Coast Line Railway.

The Seaboard Air Line Railway.

The Southern Railway.

The Charleston Terminal Co., whose tracks extend along the entire Cooper River front, is owned by the Atlantic Coast Line Railway Co. and the Southern Railway Co. The Terminal Co. controls considerable water front property.

4. DRY DOCKING FACILITIES.

One graving dock 544 feet 10 inches by 30 feet 1 inch, United States Navy.

One marine railway 2,000 tons, United States Navy.

One floating dry dock, 8,000 tons, under construction.

One marine railway, 1,500 tons.

One marine railway, 500 tons.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

Without any dredging there are berths for vessels of the following draft:

Four vessels in 35 feet water with berths 900 yards diameter.

Eight vessels in 35 feet water with berths 500 yards diameter, or 21 vessels in 30 feet water with berths 500 yards diameter, or 51 vessels in 24 feet water with berths 400 yards diameter.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Water of good quality suitable for drinking and boiler purposes available at piers.

Water plant municipally owned. Capacity of filtration plant 7,000,000 gallons per day. Capacity of reservoir 3,000,000,000 gallons.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

The Charleston Consolidated Railway & Lighting Co. owns two power houses, but obtains at times additional current from the navy yard power house, and can obtain current from the power house of the Isle of Palms Traction Co. located on Sullivans Island.

8. COALING FACILITIES.

The Southern Railway coaling plant has a capacity of from 1,500 to 1,800 tons per hour.

The coal yard accommodates 500 cars, and other yard facilities are available if needed.

9. FUEL-OIL FACILITIES.

Total storage capacity for fuel oil, 69,125 barrels; total bunkering capacity, 1,500 barrels per hour.

Standard Oil Co.:

Tankage capacity, 15,000 barrels of gas oil.

Pipe line and size, 1 to 6 inches.

Extends to company dock about one-half mile distant.

Vessels usually pump to receiving tank at rate of 700 to 800 barrels per hour.

Texas Co.:

Storage capacity—

Gasoline.....	31, 978 barrels of 42 gallons.
Kerosene.....	54, 125 barrels of 42 gallons.
Gas oil.....	10, 281 barrels of 42 gallons.
Fuel oil.....	10, 559 barrels of 42 gallons.
Lubricating oil.....	6, 502 barrels of 42 gallons.

Total..... 113, 445 barrels.

Pipe lines to wharf.

No.	Size.	Product used for—
	<i>Inches.</i>	
2	4	Gasoline.
1	4	Gas oil.
1	4	Fuel oil.
2	4	Lubricating oil.
1	8	Prime oil.

Delivery capacity to ships: 650 barrels per hour.

10. CRANE AND DERRICK FACILITIES.

Dry-dock locomotive crane No. 1, jib type, capacity 40 tons, maximum reach 76 feet, steam operated.

Floating derrick No. 1, jib type, capacity 75 tons, maximum reach 43 feet for 75 tons, and 56 feet for 20 tons, steam operated.

The United States Navy Yard owns seven locomotive cranes, and the Valk & Murdoch Co. owns two, steam operated, capacity 15 to 20 tons.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

Steamship lines at present using the port regularly include only the Clyde Line, to New York, Jacksonville, and Boston; the Baltimore & Carolina S. S. Co., to Baltimore and Georgetown; and the Sea Island Line, to Beaufort. It is not believed that any of the other lines which called at Charleston before the war now have this city on their schedules. The South Atlantic Maritime Corporation is arranging to establish service to the West Indies, Central and South America.

STEAMSHIP SERVICES BEFORE THE WAR.

Clyde Steamship Co. (Boston, New York, Jacksonville).
 Baltimore & Carolina S. S. Co. (Baltimore, Georgetown).
 Philadelphia & New Orleans S. S. Co. (Philadelphia, New Orleans).
 Southern Transportation Co. (Philadelphia, Baltimore, Norfolk, Wilmington, Georgetown).
 American-Hawaiian S. S. Co. (Pacific coast ports).
 Luckenbach S. S. Co. (Pacific coast ports, contract service).
 W. R. Grace & Co. (west coast, South America, contract service).
 Carolina Line (United Kingdom and Continental Co.).
 United Fruit Co. (port of call) (Jamaica, Colombia, and Costa Rica).
 Sea Island Steamboat Co. (Beaufort).

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

There is no grain elevator at Charleston.

13. VESSEL CLEARANCES.

	Total number of vessels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Fiscal year ending June 30, 1914.....	78	53	115,708	165,028
Fiscal year ending June 30, 1918.....	14	53	23,386	110,512

14. REMARKS.

The administration of the port of Charleston is vested in a board of harbor commissioners consisting of 13 members, as follows: The mayor; the presidents of the chamber of commerce, the cotton exchange, and the merchants' exchange; a member of the executive committee of the State board of health; and eight other residents of the city of Charleston who are appointed by the governor. The members of the board of harbor commissioners are also commissioners of pilotage for the port of Charleston. Apparently the principal work done by the board is in examining and licensing pilots, since the city of Charleston owns no water front used for terminals.

Although the board of harbor commissioners, as commissioners of pilotage, examine, license, and regulate pilots, they have no control over the rates of pilotage, those rates being fixed by State law. The board of harbor commissioners has power to make rules for the regulation and government of vessels at the port. The board has power also "to fix the lines for said bay and harbor and rivers and creeks within which riparian owners may erect wharves, docks, and other proper erections and fixtures for commercial, manufacturing, and other purposes. The said board, or a majority of them, shall be authority to cause the removal of any wharf, dock, or other obstruction to navigation that may, in their opinion, be injurious to such bay, harbors, rivers, or creeks." The harbor master and the port wardens are appointed by the harbor board.

PORT AND TERMINAL FACILITIES, GALVESTON, TEX.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

The controlling depth of water to the sea is 30½ feet, 1,600 feet wide.

Average rise and fall of the tide, 18 inches.

The tidal range within the harbor is the same as on the entrance bar.

From the Gulf of Mexico to the principal wharves is a distance of 6 miles.

2. BERTHING CAPACITY IN LINEAR FEET.

Berthing capacity of Galveston Wharf Co.'s property, piers 10 to 41, inclusive, 60 vessels, as follows:

	Linear feet.	Berths.
Pier 10, T-head.....	362	1
Pier 10, slip.....	1,143	3
Pier 11, slip.....	982	2
Pier 11-12, T-head.....	368	1
Pier 12, slip.....	856	2
East Pier 14, slip.....	735	2
Pier 14, T-head.....	340	1
West Pier 14, slip.....	620	2
Pier 15, slip.....	630	2
Pier 15, T-head.....	341	1
Pier 16-18.....	793	2
Pier 19-20.....	746	2
Pier 21.....	798	2
Pier 23-26.....	1,390	3
Pier 27-28.....	952	2
Pier 29-30-32-33.....	1,588	4
Pier 34, slip.....	907	2
Pier 35, slip.....	745	2
Pier 35-36, T-head.....	630	2
Pier 36, slip.....	1,184	3
Pier 37, slip.....	1,173	3
Pier 37-38, T-head.....	336	1
Pier 38, slip.....	1,189	3
Pier 39, slip.....	1,167	3
Pier 39-40, T-head.....	783	2
Pier 40, slip.....	1,159	3
Pier 41, slip.....	1,177	3
Pier 41, T-head.....	384	1

Depth of water at present alongside piers 28 to 30 feet.

3. NAMES OF RAILROAD LINES SERVING THE PORT.

Gulf, Colorado & Santa Fe Railway, of the Santa Fe System

International & Great Northern Railway, of the Gould System.

Missouri, Kansas & Texas Railway.

Galveston, Houston & Henderson Railway.

Galveston, Harrisburg & San Antonio Railway, of Southern Pacific System.

Gulf & Interstate Railway.

All rail lines deliver direct to the Galveston Wharf Co., who in turn deliver to piers and wharves for delivery to ships.

4. DRY DOCKING FACILITIES.

A 10,000-ton lifting capacity floating dry dock, now in course of construction by the Galveston Dry Dock & Construction Co., contract date of completion April, 1919. At present, shop facilities of adequate capacity are located at this port which will insure any repairs necessary other than docking.

One 1,300-ton marine railway.

5. ANCHORAGE AREA AVAILABLE WITHIN THE HARBOR.

Within the harbor there are 1,200 acres available for anchorage of vessels drawing 28 feet and over, and 1,144 acres available for vessels drawing 30 feet and over. The latter anchorage varies in depth from 40 feet to 50 feet.

There are 1,450 acres of over 24 feet depth.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

The water of Galveston water-works system, which has a capacity of 7,000,000 gallons per day, is good for boiler, as well as drinking purposes. Average time for placing water in ships is 100 tons per day per run. No data as to the equipment on piers for fresh water to vessels.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Brush Electric Co. can furnish 1,500 kilowatt, 2-phase, 60-cycle, 2,300-volts, alternating current.

Galveston Electric Co. can furnish 1,000 kilowatt, 3-phase, 60-cycle, 2,300-volts, alternating current. Can also furnish direct current.

8. COALING FACILITIES.

Stationary coal facilities located at pier 34 operated by Galveston Coal Co., equipped with Boston Steeple Tower whose boom lowers down and extends over the beam of the vessel. Operating through this tower on steel railway track 56 feet above the walk with Lidgerwood rapid conveying apparatus one 2½-ton clamshell bucket; can load and unload 600 to 700 tons of coal per day.

One small floating plant equipped with derrick and grab bucket, capacity 50 tons per hour. Another floating coaling facility is equipped with a belt conveyor apparatus; coal is lifted by bucket and dropped into hopper conveyor through chutes into bunker hatches; capacity, 30 to 60 tons per hour.

Galveston Coal Co., Pier 34, carry 5,000 tons stock; coal elevators, 30 tons per hour.

Pier 33, Galveston Coal Co., storage capacity 25,000 tons. Mechanical coal bunkering plant extends along slip for 400 feet; capacity, 80 tons per hour. Two floating coaling barges, with combined capacity of 190 tons per hour.

9. FUEL OIL FACILITIES.

Magnolia Petroleum Co. has storage capacity of 90,000 barrels. Capacity of pipe line from tanks to ship side is 1,000 barrels per hour. Pipe extends from tank to Galveston Wharf Co.'s wharves or shipside.

The Texas Co. has storage capacity of 110,000 barrels. They have two pipe lines extending from storage tanks to wharves with a capacity of 700 barrels per hour. Floating equipment (2 barges), 600 barrels per hour.

The Gulf Refining Co. has storage capacity of 30,776 barrels. They have one 6-inch pipe line extending from the tanks to Galveston Wharf Co.'s Pier 39 and another to Pier 38, with a capacity of 1,000 barrels per hour from or to vessel. Another 4-inch pipe line extends from storage tanks to Galveston Wharf Co.'s Pier 39, capacity, to or from vessel, 500 barrels per hour. Floating equipment, 60 barrels per hour. Total bunkering capacity, 1,560 barrels per hour.

The Rio Bravo Oil Co. has a storage capacity consisting of six 55,000-barrel tanks, a total of 330,000 barrels. They are equipped with one 10-inch receiving line, capacity of 2,000 barrels per hour from ships to tanks, and a discharge line branching into three 6-inch outlets, capacity from tanks to ship approximately 1,000 barrels per hour.

10. CRANE AND DERRICK FACILITIES.

There are installed at Galveston Wharf, Pier 41, two large gantry electric cranes each with a capacity of 1½ tons. These cranes are used for the purpose of unloading cargo direct from hold of vessel into the second story of pier warehouses or vice versa. These cranes operate on railroad track the entire length of the pier.

Other facilities consist of Brownhoist of 10-tons capacity and derrick cars of 4 to 5 tons capacity for the handling of heavy commodities.

There are also available floating derrick barges with capacity of 10 tons and two floating derricks with lift capacity of 50 tons.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

Castle Line.	Texas-European Line.
Harrison Line.	Pinollis Line.
Leyland Line.	United Fruit Co.
Larrinaga Line.	Mallory Line, coastwise.
Booth Line.	Morgan Line, coastwise.
Elder-Dempster Line.	Ward Line.
South Atlantic Steamship Co.	United Steamship Co.
Kerr Line.	New York & Cuban Mail S. S. Co.
Perez Line.	Gulf-Barcelona Line.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

The facilities of the port for handling grain consist of four elevators, namely:

Name.	Owned by—	Capacity.
Elevator A.....	Galveston Wharf Co.....	<i>Bushels.</i> 1,500,000
Elevator B.....	.....do.....	600,000
Star Mills Elevators.....	Texas Star Flour Mills.....	500,000
Sunset Elevator.....	Southern Pacific Terminal Co.....	1,000,000

Elevator A is located close to the water and grain is loaded aboard vessels direct from the scales by gravity. There are seven loading spouts, each spout being capable of loading 15,000 bushels of grain per hour.

Elevator B, Texas Star Flour Mills and Southern Pacific Terminal Co. Elevators deliver grain to vessels over belts at a rate of approximately 30,000 bushels of grain, each elevator, per hour.

13. VESSEL CLEARANCES.

	Total number of vessels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Fiscal year ending June 30, 1914.....	739	339	1,850,676	927,850
Fiscal year ending June 30, 1918.....	540	311	989,159	758,045

14. REMARKS.

Galveston's foreign commerce, which is more than nine-tenths exports, ranks in value with that of the leading ports of the United States. It has also a large coastwise trade. Cotton is its principal item of export, constituting more than three-fourths of the total value thereof. Other important items are wheat and cotton-seed products. The principal import items are crude oil, sugar, and corn.

The terminals at Galveston are privately owned and administered. There is no port administrative authority, except the harbor master. The city, however, is one of the largest stockholders in the Galveston Wharf Co., which owns the principal terminals, and appoints three of the nine members of the board of directors of that company. It is remarked that the wharf property at Galveston has not had extensive use since the fall of 1914, and, if vessels are furnished, the port can handle many times the tonnage handled at any time during the past four years.

PORT AND TERMINAL FACILITIES, GULFPORT, MISS.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Channel to the sea 300 feet wide, 17.8 feet deep.

Tidal range at entrance and within harbor, 21 inches.

Distance from the Gulf of Mexico, 8.9 miles.

2. BERTHING CAPACITY, IN LINEAR FEET.

There is 5,150 linear feet of berthing space, with depths of water ranging from 16 to 21 feet.

Piers.	Dimensions.	Area.
	<i>Feet.</i>	<i>Square feet.</i>
East River.....	30 by 3,600	108,000
Timber River.....	10 by 700	7,000
West Pier.....	30 by 850	25,500
Total.....		140,500

3. NAMES OF RAILROAD LINES SERVING THE PORT.

Gulf & Ship Island Railroad.
Louisville & Nashville Railroad.

4. DRY-DOCKING FACILITIES.

There are no dry-docking facilities at this port.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

3,484,800 square feet, with average depth of 17.8 feet at mean low water.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Unlimited supply is available. It is obtained from artesian wells and is of the best quality.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Gulfport & Mississippi Coast Traction Co. furnishes alternating current from a plant of 5,000 horsepower.

8. COALING FACILITIES.

Coal facilities consist of one coal tipple, electrically equipped and operated; capacity for handling from cars to storage, 40 to 50 tons per hour. Cars may be unloaded direct to vessel by use of two steam-operated cranes, with a capacity of 30 tons per hour.

9. FUEL-OIL FACILITIES.

There are no fuel-oil bunkering facilities. Fuel oil is, however, sometimes furnished direct from barge to vessel.

10. CRANE AND DERRICK FACILITIES.

There are two steam-operated cranes, one of 12½ tons capacity and one of 7 tons; one portable derrick, capacity 3 tons; one stationery derrick, capacity 5 tons.

11. STEAMSHIP LINES AT PRESENT USING PORT REGULARLY.

There are no steamship lines using this port regularly.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

There are no grain elevators or facilities for storing bulk grain. Grain in sacks, however, can be handled and stored in the pier warehouses of the Gulf & Ship Island Railroad.

13. VESSEL CLEARANCES.

During the calendar year 1914, 208 steamers, of 365,616 net tons, and 193 sailing vessels, of 119,489 net tons, were engaged in the foreign and coastwise commerce of the port.

During the calendar year 1917, 82 steamers, of 116,108 net registered tons, and 129 sailing vessels, of 103,621 net registered tons, were engaged in the foreign and coastwise commerce of the port.

14. REMARKS.

Gulfport is one of the leading export yellow-pine lumber and timber ports of the Gulf. The principal terminals are privately owned.

PORT AND TERMINAL FACILITIES, JACKSONVILLE, FLA.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Channel 27 feet minimum depth, 300 feet wide, 27½ miles long, to Atlantic Ocean; tidal range on bar, 5.2 feet; tidal range in harbor, 0.8 of a foot.

2. BERTHING CAPACITY IN LINEAR FEET.

	Linear feet. ¹
20-foot depth.....	2,701
22-foot depth.....	3,040
23-foot depth.....	400
24-foot depth.....	350
25-foot depth.....	4,000
27-foot depth.....	200
28-foot depth.....	6,000

The piers are generally of wood with galvanized-iron warehouses. There are three municipal piers with 18 to 30 feet of water alongside, and 5,414 feet of berthing space. They have improved facilities for handling freight. In addition to the berthing space noted, there are a number of other piers and wharves with depths alongside running as high as 24 feet for a portion of their length, but figures furnished are not exact enough to indicate the extent of the various depths. The total berthing capacity is 35,994 linear feet.

3. NAMES OF RAILROAD LINES SERVING PORT.

Seaboard Air Line Railway.
Atlantic Coast Line Railroad.
Florida East Coast Railway.
Southern Railway.
Georgia Southern & Florida Railway.
St. Johns River Terminal Co. (doing the terminal switching for the Southern and Georgia Southern & Florida Railways).

4. DRY-DOCKING FACILITIES.

At present there exists but one floating dry dock and an old marine railway in this port. The dock provides for 4,500 tons capacity, and occasionally, under necessity, has handled as much as 5,000 tons.

There are also under construction a 6,000-ton floating dry dock and a 2,500 ton marine railway at the Jacksonville municipal docks. This dry dock is being built in sections, thus enabling it to be enlarged when necessary.

¹ There seems to be an uncertainty as to continuance of depths for length of pier, which would modify these figures to some extent.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

Areas: 3,000 feet long by 700 feet to 1,200 feet wide, with depths 36 to 42 feet; 4,000 feet long by 1,000 feet to 1,500 feet wide, with depths 32 to 57 feet; 7,500 feet long by 600 feet to 1,400 feet wide, with depths 30 to 40 feet; 6,000 feet long by 900 feet to 1,400 feet wide, with depths 18 to 22 feet, from Jacksonville to Trout Creek; and area 3,000 feet long by 800 feet wide, with depth 27 to 32 feet at Mayport, and several emerging anchorages between these points.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Any quantity available, varying in quality from a lime and sulphur or hard water, to a soft water practically free of either lime or sulphur.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Quantity: Present capacity, after latest additions in equipment, 12,000 kilowatt.

Characteristics: Both alternating and direct currents are present.

Voltage: 6,600-13,000-2,200-110.

Phase: Three—60 cycles.

Name and location of producer: Producer, city of Jacksonville; plant located at Talleyrand Avenue. A 500-volt direct-current plant is located at the city waterworks and power house on Main Street and Springfield Park.

The municipal electric plant of the city of Jacksonville is a paying utility, has met the demands so far made upon it for power and current, and is adaptable to almost any enlargement of capacity that might become necessary.

8. COALING FACILITIES.

Two plants with storage bins, one dealer with very limited storage area.

Logan Coal & Supply Co. has a coal pier with capacity of 10,000 tons, bunkering facilities that will load 75 tons per hour; can also barge an equal number of tons per hour. At head of this pier the water is 25 feet, in slip 17 feet deep.

The Weller Coal Co. has a coal pier with capacity of 4,000 tons, with handling capacity of 50 tons per hour. Vessels can load at head of the pier; water depth 18 feet.

In abnormal conditions we could store from 20,000 to 25,000 tons of coal. Two phosphate docks here, one with a capacity of 10,000 tons and the other with a capacity of approximately 5,000 tons, can, if necessary, be made into coal storage with loading facilities.

Coal can be trimmed in bunkers here at the rate of 50 to 75 tons per hour.

9. FUEL OIL FACILITIES.

Tankage for fuel oil located at Jacksonville is 470,792 barrels, 42 gallons to the barrel. The tankage is owned by the Standard Oil Co., the Gulf Refining Co., the Texas Oil Co., the Mexican Petroleum Co.,

and the Mexican-Freeport Oil Co. The tankage at Jacksonville is much larger than in other coast towns south of Baltimore, and in addition to the above tankage, there is at Port Tampa City, Fla., at least 400,000 barrels more storage within 12 to 14 hours transportation to Jacksonville. Total bunkering capacity, 4,400 barrels per hour.

10. CRANE AND DERRICK FACILITIES.

No information furnished.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

Clyde Steamship Co.

Merchants & Miners Transportation Co.

Miami Steamship Co.

All coastwise.

The South Atlantic Maritime Corporation is arranging to establish services to the West Indies, Central and South America.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

Florida Grain & Elevator Co., located on Commodore Point Terminals, has capacity for 60,000 bushels, served by one track, 8-car capacity. The Florida Grain & Elevator Co. is not located on the water front.

13. VESSEL CLEARANCES.

Information not furnished.

14. REMARKS.

Administration of the port of Jacksonville is handled by a board of port commissioners, 15 in number, with wide powers, elected by popular vote. It is estimated that the wharves and terminals can handle 50 per cent more than their present business. There is a marginal railroad, the St. Johns River Terminal Co., controlled by the Southern Railway, that connects with all railroads and most of the terminals. Loading is from rail to ship at the principal terminals. There is warehouse storage available at and near terminals of 307,444 square feet.

Jacksonville has an extensive coastwise trade, though its foreign trade is small. It has municipal terminals which are modern and are being equipped with approved cargo-handling devices.

PORT AND TERMINAL FACILITIES, LOS ANGELES, CAL.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Forty-eight feet at harbor entrance.

Thirty-five feet to outer harbor wharves.

Twenty-nine feet in main channel.

Twenty-eight feet to Pier A wharves.

Depths are at mean lower low tide.

Five and one-half feet tidal range within and without harbor.

Harbor is located at former harbor towns of San Pedro and Wilmington, on San Pedro Bay, Pacific Ocean, now incorporated as part of the city of Los Angeles, a distance of about 20 miles from business center of the city.

2. BERTHING CAPACITY IN LINEAR FEET.

Depth(feet).	Linear feet.
13	876
14	1,485
20	500
21	825
22	330
25	2,225
27	2,788
28	4,651
29	3,000
30	8,403
35	5,920
.....	31,003

Description.	Length.	Depth alongside.
	<i>Feet.</i>	<i>Feet.</i>
Municipal Pier No. 1, Wharf No. 1.....	2,520	35
Municipal Pier No. 1, Wharf No. 2.....	400	35
Pier "A," shed No. 1.....	1,256	30
Pier "A," shed No. 2.....	800	28
Pier "A," sheds No. 3 and 4.....	1,329	30
Standard Oil municipal wharf.....	722	30
First Street municipal wharf.....	295	28
Water Street municipal wharf.....	670	25
Fries Street municipal wharf.....	330	22
Fish Harbor municipal wharf.....	1,485	14
Fish Market municipal wharf.....	300	13
Fishermen's municipal wharf.....	576	13
Banning municipal wharf.....	152	27
Crescent municipal wharf.....	292	27
Salt Lake municipal wharf.....	901	30
Southern Pacific commercial wharf.....	2,200	28
Southern Pacific lumber wharf.....	3,000	29
Outer Harbor Dock & Wharf Co., commercial wharf.....	3,000	35
Outer Harbor Dock & Wharf Co., lumber wharf.....	2,400	30
E. K. Wood Lumber Co., wharf.....	825	21
San Pedro Lumber Co., wharf.....	1,555	25
Kerckhoff-Cuzner Lumber Co., wharf.....	1,042	27
Hammond Lumber Co., wharf.....	500	27
Do.....	500	20
Blinn Lumber Co., wharf.....	797	27
Crescent Wharf & Warehouse wharf.....	456	28
Los Angeles & Salt Lake R. R., commercial wharf.....	900	28
Los Angeles & Salt Lake R. R., lumber wharf.....	1,000	30
Southwestern Wharf Co., wharf.....	800	30
	31,003	.....

Municipal warehouse No. 1, reinforced concrete, six stories and basement, with depressed tracks, elevators, etc., has 415,000 square feet of storage.
Municipal transit sheds (completely inclosed) have a total of 457,700 square feet of storage.

3. NAMES OF RAILROAD LINES SERVING PORT.

The harbor department of the city of Los Angeles owns and operates (through the Pacific Electric Railway Co. as its agent) 13 miles of municipal harbor terminal railway, serving all municipal wharves and all industries on city lands. The Southern Pacific, Salt Lake, and Pacific Electric lines connect with the Terminal Railway and through it reach all points. The Santa Fe had obtained permission to connect with the Terminal Railway at the time the United States Railroad Administration took over the rail lines, but the Santa Fe now reaches the harbor over the Southern Pacific and Salt Lake rails. The Salt Lake also serves its own wharves and various lumber wharves on the east side of the main channel, and

the Southern Pacific serves its own wharves and various lumber wharves on the west side of the main channel. The Outer Harbor Dock & Wharf Co. does its own switching on its docks, connecting with the Pacific Electric and Southern Pacific lines.

4. DRY DOCKING FACILITIES.

Dredging is now in progress for the installation of a floating dry dock by the Los Angeles Shipbuilding & Dry Dock Co. It is to be of not less than 10,000 tons capacity.

A 3,000-ton floating dock is located at Long Beach, 5 miles east of Los Angeles Harbor.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

Two hundred acres between the 30-foot contour and the breakwater, which is located on the 48-foot contour.

Three hundred acres additional between 20 and 30 foot contours. Anchorage is used comparatively little at this port.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Best possible.

Municipal water of the harbor district, city of Los Angeles.

Unlimited quantity at municipal domestic rates.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Alternating current, 50 cycles, 3-phase, and standard voltage, 4,400, 2,200, 440, 220, 110. Produced and furnished by the municipal power bureau, public service commission, city of Los Angeles. The Southern California Edison Co. also has lines in the harbor district.

8. COALING FACILITIES.

Coal at present is supplied ships direct from cars on wharf, there being no coal bunkers at the port at this time. Good steam coal is obtained from Utah. If two weeks' notice is given, coal can be put alongside ship and transferred to ship economically. Harbor authorities have plans under way for coal barges and handling machinery.

9. FUEL-OIL FACILITIES.

Within recent years Los Angeles Harbor has become one of the greatest oil ports in the world, and it can furnish any quantity of any kind of oil. Three large companies are now operating here, as follows:

Union Oil Co.—Storage capacity, 30,000 barrels. Loading rate, 500 barrels per hour. Has oil barge of 2,000 barrels capacity, which will load at the rate of 500 barrels per hour. Pipe lines from oil fields both east and west of Los Angeles.

The Union Oil Co. is now constructing a large new refinery adjacent to the harbor, and it has applied to the city for new loading

tank and berth facilities. When these are completed it expects to be able to deliver 5,000 barrels an hour.

General Petroleum Corporation.—Storage: Wilmington Station, 330,000 barrels; reservoir and tanks adjoining Fort MacArthur, 592,000 barrels; San Pedro pumping station, 40,000 barrels. Two loading stations on breakwater with a capacity of 3,000 barrels per hour each. One oil barge for bunkering with a capacity of 3,500 barrels. Pipe line from Midway and Kern River oil fields.

Standard Oil Co.—This company has a very large and complete oil station adjacent to the Turning Basin. Storage capacity, 460,000 barrels. Delivery capacity, 7,000 barrels of fuel oil per hour. It also has lines for refined oil with a capacity of 5,000 barrels per hour. No bunkering barge at present. Pipe lines from refinery at El Segundo and from oil fields east of Los Angeles. City has built a municipal wharf for this company on west side of turning basin.

10. CRANE AND DERRICK FACILITIES.

The city of Los Angeles owns and operates the following:

One electrical steel derrick, 20 tons capacity, 98-foot boom. At present located at Pier A.

One hand crane, 5 tons capacity, north end of Pier A.

One floating steam derrick, 20 tons capacity, 70-foot boom.

One locomotive crane, 15 tons capacity, two booms, 36 and 49 feet.

One A-frame floating derrick, 5 tons capacity.

There are a number of other locomotive cranes about the harbor, but they are at present in use by the shipyards and not available for commercial use.

The Southwestern Shipbuilding Co. is installing shear legs of 100 tons capacity at its plant, which will be available for commercial use when not engaged on Government work. The Los Angeles Shipbuilding & Dry Dock Co. also has shear legs of 80 tons capacity, which might be commercially available in cases of necessity.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

Pacific Steamship Co., to Seattle, San Francisco, and San Diego.

San Francisco & Portland Steamship Co., to Portland and San Francisco.

Los Angeles Pacific Navigation Co., to Kobe, Shanghai, Hong-kong, and Manila.

Pacific Mail Steamship Co., irregular service to Mexico and Central America.

Gulf Mail Steamship Co., irregular service to Mexico, Central and South America.

Toyo Kisen Kaisha, to Salina Cruz, Balboa, and South America.

Harrison Direct line, infrequent service from Europe.

McCormick Steamship Co., frequent but irregular service to San Francisco, Portland, and northern lumber ports.

Many lumber vessels also ply continuously between Los Angeles and northern Pacific ports.

Standard Oil Co., irregular service to various ports.

Union Oil Co., irregular service to various ports.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

The only elevator at Los Angeles Harbor is one of 100,000 bushels capacity, erected by the Globe Grain & Milling Co. for its own use. Normally it will handle a cargo of 1,000 tons in 24 hours.

13. VESSEL CLEARANCES.

	Total number of ves- sels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Fiscal year ending June 30, 1914.....	58	3,861	155,957	2,603,317
Fiscal year ending June 30, 1918.....	171	2,147	197,527	1,866,543

14. REMARKS.

Los Angeles is a municipally controlled and, to a large extent, a municipally owned port. This control is exercised through the harbor department of the city government. The controlling authority is the board of harbor commissioners, composed of three members, appointed by the mayor and confirmed by the city council. This board appoints a secretary, traffic manager, harbor engineer, pilots, port wardens, wharfinger, terminal railway superintendent, and other employees.

The harbor department owns and operates all municipal wharves, warehouses, railways, equipment, tugs, and other harbor facilities; grants permits and leases land for industrial uses; fixes rates for municipal facilities, including pilotage; and makes and enforces rules and regulations for the government of the harbor.

This is one of the greatest oil export ports in the world. There are large quantities of food products, particularly canned fish, canned fruit, sugar and citrus fruits, produced in and around the city. Los Angeles has become an ocean port only within the last few years, but the growth of its commerce has been rapid. Its equipment is thoroughly modern, ample, and well coordinated.

PORT AND TERMINAL FACILITIES, MOBILE, ALA.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Mobile is on the west bank of the Mobile River, and connected with the Gulf of Mexico by a dredged channel 33½ miles in length.

Coast chart No. 188 shows the channel to have been dredged to 24 feet at mean low water June, 1917. Chart contains note that the material in channel is soft and can be navigated by vessels drawing 27 feet. The United States engineers are now at work on the new project, 30 feet inside the harbor and 33 feet over the outer bar, which they expect to complete this year, 1919.

The mean range of tide is 1½ feet.

2. BERTHING CAPACITY IN LINEAR FEET.

Owners of all piers and wharves.	Ships accom- modated.	Berthing space and depth of water.			
		15-19 feet.	20-22 feet.	23-24 feet.	25-27 feet.
Mobile & Ohio, No. 8.....	2	.....	.....	.....	445
Mobile & Ohio, grain, No. 7.....	1	.....	.....	.....	425
Mobile & Ohio-Southern, No. 6.....	2	.....	.....	.....	440
Southern, No. 5.....	1	.....	.....	.....	430
Southern, No. 4.....	2	.....	.....	.....	350
Southern-Mobile & Ohio, No. 3.....	3	.....	.....	.....	405
Mobile & Ohio, No. 2.....	2	.....	.....	.....	350
Mobile & Ohio, cotton, No. 1.....	2	.....	.....	.....	395
Municipal wharf.....	3	.....	.....	.....	405
Turner Terminal.....	10	.....	.....	.....	400
Louisville & Nashville.....	3	1,450	.....	.....	350
Gulf, Mobile & Northern.....	2	975	.....	.....	440
Alabama, Tennessee & Northern.....	2	.....	800	.....	520
Total.....	35	2,425	800	1,740	450
					770
					3,200

A city pier that will accommodate 16 ships is now under construction; will have 5,800 feet, 27 to 30 feet of water.

In addition to the piers and wharves named, there is mooring space for eight vessels unloading timber from the water.

All piers have railroad tracks alongside, and in reach of ship's tackle. The covered floor area of all the facilities amounts to 820,650 square feet.

3. NAMES OF RAILROAD LINES SERVING PORT.

Louisville & Nashville Railroad.

Southern Railway.

Mobile & Ohio Railroad.

Gulf, Mobile & Northern Railroad.

Alabama, Tennessee & Northern Railroad (connects with Southern Railway at Calvert, 34 miles north of Mobile).

4. DRY DOCKING FACILITIES.

Alabama Dry Dock & Shipbuilding Co.—One 4,000-ton floating dry dock; one 900-ton floating dry dock; one 400-ton floating dry dock; one 1,200-ton marine railway; one 10,000-ton floating dry dock, under construction; one 200-ton marine railway.

Henderson Shipbuilding Co.—One 2,500-ton marine railway.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

There is practicably no anchorage area available other than for emergency anchorage in the channel, which would not allow the vessel to swing at anchor. The nearest anchorage is back of Fort Morgan, about 30 miles south of Mobile.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Boiler water as well as drinking water is supplied to vessels at the rate of 15 cents per 1,000 gallons from the city mains.

The city water capacity is 20,000,000 gallons per day.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Current is available at all piers and wharves. The plant of the Mobile Electric Co. is located 2 blocks from the waterfront. A new and larger plant is about to be built on the waterfront.

The characteristics of the current are: Direct current, 240 volts: alternating current, either 220 or 2,300; 3-phase, 60-cycle.

8. COALING FACILITIES.

Owner.	Character.	Normal capacity per hour.
		<i>Tons.</i>
Alabama Coal & Transportation Co.....	Locomotive crane.....	100
Mobile Coal Co.....	do.....	100
Do.....	Derrick, barge.....	100
Do.....	do.....	50
Gulf Coal Co.....	do.....	50
Do.....	do.....	50
Pratt Consolidated Coal Co.....	Collier.....	125
Do.....	Derrick, barge.....	50
Zimmern Coal Co.....	do.....	50
Do.....	do.....	50
Louisville & Nashville R. R.....	Coal tipple.....	400
Southern Ry.....	Coal hoist (steam).....	65

9. FUEL OIL FACILITIES.

Fuel oil facilities are limited, due to the lack of demand.

Gulf Refining Co. has a total tank capacity of 1,260,000 gallons; 10,000 gallons of these storage facilities are devoted to fuel oil.

Palm Oil Co. has a total tank capacity of 75,000 gallons, none of which is at present devoted to fuel oil.

Standard Oil Co. has a storage capacity of 500,000 gallons; no fuel oil carried in stock.

The Texas Co. has a storage capacity for 1,000,000 gallons; no fuel oil carried in stock. This company has under way the installation of a very complete fuel oil station at this port, with storage capacity of 5,000,000 gallons, or 119,048 barrels; delivery capacity 10,000 gallons, or 238 barrels per hour.

10. CRANE AND DERRICK FACILITIES.

FLOATING.

Name of company owning or operating.	Tons capacity and reach.
Mobile Barge Co.....	25-ton, 70 foot-boom.
Do.....	10-ton, 65-foot-boom.
Do.....	5-ton, 50-foot-boom.
Lapwing Towing & Wrecking Co.....	5-ton.
Mobile & Gulf Navigation Co.....	5-ton, 50 feet.
Do.....	3-ton, 40 feet.
Pratt Consolidated Coal Co.....	1, with 60-foot boom.
Gulf Coal Co.....	50-foot reach, 75-foot boom.
Do.....	45-foot reach, 70-foot boom.
Mobile Coal Co.....	Two 10-ton, 30-foot reach.
Alabama Dry Dock & Shipbuilding Co.....	15-ton, 75-foot.

FIXED.

Alabama Dry Dock & Shipbuilding Co.—One 40-ton stiff-leg derrick, located alongside of railroad cars so that it can handle machinery into vessels; one 15-ton locomotive traveling crane; two 5-ton locomotive cranes; one 10-ton, 85-foot guyed derrick; one 3-ton, 65-foot guyed derrick; four 6-ton, 60-foot guyed derricks.

Various other derricks owned by different companies, from 6 to 10-ton capacity.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

During war conditions the only steamship lines using this port regularly are the following:

Munson Steamship Line, Cuba and West Indies.

Munson Steamship Line, South America.

Mallory Steamship Line, New York, Tampa and Key West, Fla.

United Fruit Co., Central America.

Leyland Line, Liverpool.

Maclay Line, Glasgow, Scotland.

Before the European War, there were 19 lines using this port, more or less regularly.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

The Mobile & Ohio Railroad has a grain elevator, storage capacity of 225,000 bushels, and a capacity for loading vessels at the rate of 15,000 bushels per hour.

13. VESSEL CLEARANCES.

	Total number of vessels cleared		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Fiscal year ending June 30, 1914.....	718	252	557,914	178,896
Fiscal year ending June 30, 1918.....	351	166	355,953	113,129

14. REMARKS.

Mobile does a considerable cotton and lumber export business. It has a growing river and coastwise trade. Coal is brought down *by* the Alabama River on barges from the Birmingham district to Mobile.

The administration of the port of Mobile, so far as the municipal government is concerned, is vested in the city commissioners, one of whom is assigned to the department of public works and has direct supervision and control of the wharves of the city. The harbor master, who serves also as a port warden, and two other port wardens are selected biennially by a board consisting of the mayor and the presidents of the chamber of commerce, the cotton exchange, and the board of underwriters, as provided in sections 4901-4957 of the Code of Alabama, 1907. The port wardens act also as pilot commissioners.

The harbor master is assisted by three deputy harbor masters who superintend the mooring and movement of vessels in the harbor. The master of a vessel may perform this service for himself, but if it is performed by a deputy harbor master, a fee of from \$5 to \$10 is generally charged. The harbor master himself is paid a regular salary by the city and county jointly.

The municipal wharves are in charge of a superintendent and an assistant superintendent of wharves, who are salaried officials appointed by the city commissioners.

PORT AND TERMINAL FACILITIES, NEW ORLEANS, LA.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Thirty-foot depth over bar at south pass of Mississippi at mean low water.

Twenty-seven foot depth over bar at southwestern pass of Mississippi at mean low water.

Distance to New Orleans from mouth of Mississippi, 110 miles.

Channel 35 feet minimum depth.

Three-quarters of a mile average width.

Depth at wharves, 30 feet minimum.

Tidal range at pass about 3 feet; at New Orleans, negligible.

2. BERTHING CAPACITY IN LINEAR FEET.

Berthing capacity total 45,911 linear feet.

There are 101 acres of wharves connected by one municipal and two privately owned terminal railroads.

Track storage for 13,000 cars.

Facilities of the port, dock department.

	Length.	Covered length.	Wharf area.	Open area.
SHED.				
		<i>Feet.</i>	<i>Sq. feet.</i>	<i>Sq. feet.</i>
Eighth-Harmony.....		1,297	244,632	33,700
Sixth Street.....		599	112,675	13,880
First Street.....		1,795	293,835	51,015
St. Andrew Street.....		1,577	115,140	24,405
Celeste Street.....		1,173	189,620	26,489
Robin Street.....		2,611	439,845	55,045
Erato Street.....		987	198,385	35,530
St. Joseph Street.....		285	12,385	4,460
Julia Street.....		400	59,666	31,760
Girod Street.....		566	111,393	26,512
Poydras Street.....		700	139,610	.....
Bienville Street.....		1,266	125,195	95,410
Toulouse Street.....		1,270	132,145	29,145
Dumaine Street ¹		1,240	163,000	17,000
Governor Nicholls.....		419	29,580	19,335
Mandeville Street.....		1,097	77,370	24,230
Press Street.....		812	42,230	49,965
Louisa Street.....		499	43,949	38,460
Pauline Street.....		571	81,340	32,100
Commodity warehouse ²		2,000	³ 560,000	68,840
OPEN WHARF.		21,164	3,171,995	677,281
At Louisiana Avenue.....	140		26,240	.....
Between Sixth-Eighth-Harmony.....	561		103,280	.....
Sixth-First Street shed.....	500		76,385	.....
At Jackson Avenue.....	206		31,140	.....
Celeste and Robin Streets.....	547		96,455	.....
Erato and St. Joseph Streets.....	370		23,990	.....
Louisa and Pauline.....	1,943		262,785	.....
Cotton warehouse wharves.....	2,000		329,700	.....
Grain elevator wharf.....	1,500		.....	.....
	7,767		949,975	.....
RAILROAD WHARVES, EAST SIDE.				
Stuyvesant Docks (Illinois Central).....	4,704		⁴ 452,500	223,200
Chalmette and Port Chalmette (Southern Railway).....	3,880		⁴ 777,600	90,000
RAILROAD WHARVES, WEST SIDE.				
Westwego, Trans-Mississippi Terminal (Texas & Pacific-Missouri Pacific).....	4,706		⁴ 358,211	117,893
Algiers (Gretna) (Southern Pacific).....	1,720		⁴ 212,000	117,200

¹ To be completed by Apr. 1, 1919.² To be completed by June 15, 1919.³ Area of first floor 280,000 square feet; area of second floor 280,000 square feet.⁴ Railroad covered wharf area.

Depths of water alongside these wharves; 30 to 40 feet.

3. NAMES OF RAILROAD LINES SERVING THE PORT.

Illinois Central Railroad, Louisiana Railway & Navigation Co., Louisiana Southern Railway, Louisville & Nashville Railroad, New Orleans & Lower Coast Railway, New Orleans Great Northern Railroad, Southern Pacific Railway, Southern Railway System, Texas & Pacific Railway, Yazoo & Mississippi Valley Railroad, and Gulf Coast Lines. The Public Belt Railway connects all railways with all public wharves.

4. DRY DOCKING FACILITIES.

One floating dry dock, 2,000 tons.

One floating dry dock, 5,000 tons.

Small section docks for small craft.

One floating dry dock, United States Navy, 522 feet long, 28 feet over keel blocks, 15,000 tons.

One floating dry dock, 10,000 tons, under construction.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

There is available anchorage up or down the Mississippi which has a minimum of 60 to 80-foot depth in a channel averaging $\frac{3}{4}$ mile wide, to any distance not too far to be convenient to wharves, which extend about 4 miles along the east bank of the river at New Orleans.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Mississippi River water sterilized and purified, with plant capacity of 63,000,000 gallons daily. Water excellent for drinking purposes and contains a small amount of sulphate, which causes some scale when used in stationary boilers.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

New Orleans Railway & Light Co.; total maximum capacity of plant is as follows:

Alternating current capacity 43,250 kilowatts, 60-cycle, 3-phase, 6,600 volts.

Direct current capacity 13,850 kilowatts, 550 volts for electric railway, and at Edison station 115/230 volts, Edison three-wire system.

8. COALING FACILITIES.

Three coal tipples, combined capacity 450 tons per hour.

Additional tipple under construction, 200 tons per hour capacity.

The tipples load on barges and coal is transferred therefrom into vessels by floating elevators. Bunker coal is loaded at the same time the general cargo is being taken on.

Proposed coal-handling plant, to be completed July 1, 1919, to be owned and operated by the board of commissioners of the port of New Orleans:

To be located on the river front.

To have a storage capacity of 25,000 tons.

To be able to handle coal in the below-mentioned ways:

From railroad car to storage, 200 tons per hour.

From barge to storage, 200 to 300 tons per hour.

From railroad car to ship, 300 to 400 tons per hour.

From storage to ship, 400 to 500 tons per hour.

This plant to be used as well for coaling of cargo ships (10,000 tons) as for bunkering.

9. FUEL OIL FACILITIES.

Storage tanks of combined capacity of about 700,000 barrels, owned by five different companies.

Bunkering capacity is about 7,000 barrels per hour and bunkering is either at docks or by barge.

10. CRANE AND DERRICK FACILITIES.

Modern and efficient wharf and floating derrick equipment.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

Lines.	Ports of destination.
American Fruit and Steamship Co.	Frontera and Tobasco (Mexico).
Atlantic, Gulf & Far East Line.....	Ports in Japan, China, Philippines, India.
Atlantic Fruit Co.....	Nicaraguan ports.
Do.....	Honduran ports.
Do.....	Mexican ports.
Bluefields Fruit & Steamship Co.....	Bluefields (Nicaragua).
Do.....	Caba Gracias (Nicaragua).
Compagnie Generale Transatlantique.....	Havre.
Creole Line.....	Genoa.
Elder-Demster Line.....	Liverpool, Rotterdam.
Gans Steamship Line.....	Rotterdam.
Harrison Line.....	Liverpool.
Head Line.....	Belfast.
Do.....	Dublin.
Holland-America Line.....	Rotterdam.
Independent Steamship Line.....	Honduran ports.
Leyland Line.....	Liverpool.
Do.....	London.
Maclay-Prentice Line.....	Glasgow.
Mexican Navigation Co.....	Vera Cruz and Tampico (Mexico).
Montes Line.....	Progreso (Mexico).
New York & Porto Rico Steamship Co....	Porto Rican ports.
New York & Cuba Mail Steamship Co....	Cuban and South American ports.
New Orleans & South American Steamship Corporation (Ltd.).....	South American ports.
Norway-Mexico Gulf Line.....	Christiania, Stavanger, Goteborg.
Pan-American Argentine Steamship Co...	Montevideo, Buenos Aires, Rosario.
Pierce-Cotoniera Line.....	Genoa, Naples.
Pinillos Line.....	Barcelona and other Spanish ports.
South Atlantic Steamship Line.....	London, Hull, Rotterdam.
Southern Pacific (Morgan Line).....	Havana and New York.
J. H. W. Steele Co.....	European, South American, and Far East ports.
United Fruit Co. Steamship Lines.....	Ports in Honduras and Guatemala.
Do.....	Ports in Panama and Costa Rica.
Do.....	Ports in Panama.
Do.....	Honduran ports.
United Steamship Co.....	Santiago and Cienfuegos (Cuba).
Do.....	Manzanillo and Guantanamo (Cuba).
Do.....	Ports in Jamaica and Haiti.
Vaccaro Bros. Steamship Line.....	Central American ports.
Wolvin Line.....	Vera Cruz and Tampico (Mexico).

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

Eight grain elevators, six of which handle export business and have a storage capacity of 7,222,000 bushels, as follows—

	Bushels.
Chalmette.....	500,000
Stuyvesant:	
D.....	1,000,000
E.....	1,500,000
C.....	250,000
Westwego:	
A.....	350,000
B.....	1,000,000
Public.....	2,622,000

can load 100,000 bushels of grain per hour, and unload 6,000 bushels per hour from ships or barges.

Elevators have automatic sacking scales and pneumatic conveyor system electrically operated.

13. VESSEL CLEARANCES.

	Total number of vessels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Fiscal year ending June 30, 1914.....	1,569	456	3,067,320	1,180,635
Fiscal year ending June 30, 1918.....	1,478	398	3,102,184	1,076,626

14. REMARKS.

New Orleans joint traffic bureau estimates that the movement of cars through the port can be increased from a normal movement of 800 cars per day to 3,000 per day under pressure; in other words, that the port can handle, if need be, nearly four times the business which it normally gets. There is track storage for 13,506 cars. Covered warehouse storage for general use, outside of facilities operated by dock board, is 2,000,000 square feet. There is warehouse storage for 712,000 bales of cotton in modern fireproof warehouses. The wharves and all terminal facilities are controlled and regulated by board of commissioners of the port of New Orleans, an agency of the State of Louisiana. The Public Belt Railroad is operated by the Public Belt Railroad commission, appointed by the city of New Orleans.

New Orleans ranks high among the ports of the United States for volume of business, and presents a very successful example of the public ownership and operation of port facilities. It is one of the best equipped and coordinated ports of the country, and is now spending several millions of dollars for improvements and additions, the most notable of these being a deep-water canal connecting the Mississippi River with the Gulf of Mexico through Lake Ponchartrain, which will shorten considerably the distance from New Orleans to the open sea. The items which enter largely into the volume of New Orleans' imports are coffee, raw sugar, sisal, burlap, and bananas; of exports are cotton, oil, wheat, tobacco, and cottonseed products.

PORT AND TERMINAL FACILITIES, NEWPORT NEWS, VA.

(Questionnaire answers not received. Compiled from other sources.)

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Thirty-five feet at mean low water; minimum width of channel 400 feet, maximum 750 feet.

Mean tidal range, 2.6 feet.

Distance from the sea, 34 miles.

2. BERTHING CAPACITY IN LINEAR FEET.

Total linear feet of piers in use or immediately available for use, 16,684; 11 piers in addition to 1 passenger slip and 2 car-transfer bridges, divided as follows:

	Linear feet.
General cargo and merchandise piers:	
Public Pier.....	860
Chesapeake & Ohio Railway Pier No. 4.....	1,468
Chesapeake & Ohio Railway Pier No. 3.....	1,647
Chesapeake & Ohio Railway Pier No. 6.....	1,590
Chesapeake & Ohio Railway Pier No. 8.....	1,812
Total.....	7,377
Coal piers:	
Chesapeake & Ohio Railway Pier No. 2.....	729
Chesapeake & Ohio Railway Pier No. 3.....	1,634
Chesapeake & Ohio Railway Pier No. 9.....	2,169
Chesapeake & Ohio Railway Pier No. 10.....	954
Chesapeake & Ohio Railway Pier No. 11.....	1,760
Chesapeake & Ohio Railway Pier No. 12.....	1,761
Total.....	9,307

These piers have a depth of 30 to 52 feet at mean low water.

Pier No. 7 is a small pier and is used exclusively for the tying up of tugs and other small craft, hence is not listed as having any berthing capacity for overseas or coastwise commerce. Piers 1, 4, 5, 6, and 8 are covered piers and are provided with railroad tracks and sheds. There are seven large piers belonging to the Newport News Shipbuilding & Dry Dock Co., not open for public use.

3. NAMES OF RAILROAD LINES SERVING THE PORT.

Newport News is served directly by one railway, the Chesapeake & Ohio, and, indirectly, by the several railroads having their termini in Norfolk and Portsmouth, freight being interchanged in cars on floats.

4. DRY DOCKING FACILITIES.

Newport News Shipbuilding & Dry Dock Co.: One graving dock, 804 feet length over all; 103 feet width at top; 84 feet 3 inches width at bottom; 30 feet depth of sill at mean high water. One graving dock, 592 feet 7 inches length over all; 93 feet 8 inches width at top; 55 feet 2 inches width at bottom; 24 feet 8 inches depth of sill at mean high water. One graving dock, 536 feet length over all; 99 feet 4 inches width at top; 79 feet width at bottom; 24 feet depth of sill at mean high water.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

Ample, with depths ranging from 8 to 84 feet.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

No information.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

No information.

8. COALING FACILITIES.

Chesapeake & Ohio Railway Co.: There are six coal piers, namely, Nos. 2, 3, 9, 10, 11, and 12, of which none has been used to any great extent since the completion of pier No. 9 in 1914, with the exception of piers 9 and 12. Pier No. 9 is of steel and concrete construction, 1,200 feet long, 69 feet wide, and 95 feet above the river at low water. There are 33 hoppers and chutes on each side, the hoppers having a capacity of 110 gross tons each, and are 30 feet apart, which permits every hatch of a vessel receiving coal at the same time. There are two car dumpers and elevators, each set having a capacity for handling 100 tons every two minutes. The pier has, therefore, a nominal capacity of 6,000 tons per hour, and as many vessels as can find berthing space on both sides of the pier can be served at one time. In loading the cars move by gravity, from the yard in the rear of the pier to a mechanical car dumper. This dumper, which is electrically operated, transfers the coal from the road car into a specially constructed car of 100 tons' capacity, which operates under its own electric power and is used only on the pier. This pier car passes over automatic scales into an electric elevator, by which it is raised to the top of the pier. It then moves out to the chute where its contents are unloaded.

Pier 12 is 850 feet long by 61 feet wide. There are no storage pockets on this pier. Coal is dumped from railroad cars to chute, and thence to vessel.

On May 30, 1915, the steamer *Everett*, of the New England Coal & Coke Co. fleet, was loaded at this pier with 7,820 tons of cargo coal and 189 tons of bunker coal in 2 hours and 45 minutes.

Floating equipment consists of 6 lighters of 250 tons' capacity each.

Total open storage capacity.....	tons..	250,000
Total pocket storage capacity.....	do...	6,600
Total.....	do...	256,600
Railroad car capacity.....	cars..	1,000

9. FUEL OIL FACILITIES.

No information.

10. CRANE AND DERRICK FACILITIES.

The Chesapeake & Ohio Railway has a 30-ton electric crane on the north side of pier 8. There are several others at the plant of the Newport News Shipbuilding & Dry Dock Co. ranging in lifting capacity up to 150 tons.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

Name.	Destination.
Donaldson Line.....	Glasgow.
Gans Steamship Line.....	Rotterdam.
Holland-American Line.....	Rotterdam and Amsterdam.
Norway-Mexico Line.....	Newport News, Habana, and Vera Cruz.
Virginia Line.....	Liverpool and London.
Clyde Steamship Line.....	Philadelphia, Norfolk.
Merchants & Miners' Transportation Co....	Providence, Norfolk, Baltimore, Boston.
Old Dominion Steamship Co.....	Norfolk, Richmond.
Virginia Navigation Co.....	Various points on James River.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

Chesapeake & Ohio Railway has a grain elevator with storage capacity of 1,000,000 bushels, and can handle 450,000 bushels in and out in 10 hours.

13. VESSEL CLEARANCES.

	Total number of vessels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Calendar year 1917.....	1,106	505	2,793,201	1,241,483

For the calendar year 1914 the total entrances and clearances were 1,512 vessels, of 4,703,367 net tons.

14. REMARKS.

The port is under the control of the municipality, the administrative authority being vested in the municipal industrial commission. This commission was created chiefly for the purpose of constructing and operating the new municipal harbor and for the control of municipal sites for industrial plants. The commission consists of three members who are appointed by the mayor and the city council and serve without pay. The active management of port affairs is in the hands of a manager appointed by the commission.

There are no harbor dues or wharfage charged at this port. For dockage, a charge of 1 cent per net register ton per day is made, the day of arrival and of departure counting as one day.

The principal articles of water-borne commerce for the calendar year 1917 comprised coal, canned goods, grain, forest products, wearing apparel, foodstuffs, miscellaneous oils, horses and mules, projectiles, steel billets, and ores. About 78 per cent of the total tonnage consisted of coal.

A comparative statement of the cargo tonnage handled through the port for the calendar years 1913 and 1917:

	Short tons.	Value.
1913.....	4,721,726	\$221,350,331
1917.....	6,259,774	404,821,473

or an increase in tonnage of 1917 over 1913 of 1,538,048 tons, 24.6 per cent, and in value of \$183,471,142, 45.3 per cent.

During the year 1917, 33 steamers left the port drawing 30 feet of water or over.

PORT AND TERMINAL FACILITIES, NORFOLK, VA.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Norfolk Harbor proper is 30 miles from Chesapeake Bay entrance.

Present channel in upper harbor at Norfolk Navy Yard, 35 feet depth, graduating to a depth of 40 feet in lower harbor to Hampton Roads, thence on to 85 feet at the outer capes. Now being dredged to 40 feet in upper harbor.

Elizabeth River: Southern branch (above navy yard), 22 feet; eastern branch, 22 feet; western branch, 24 feet.

Tidal range at entrance and within harbor, 2 feet 6 inches mean range, extreme, 3 feet 2 inches. The extremes are of irregular fluctuation, due to combined effects of tide and wind; referred to mean low water, are 2 feet and 4 feet.

2. BERTHING CAPACITY IN LINEAR FEET.

This harbor has about 165 wharves, having about 113,000 linear feet, total length, available for wharfage purposes. The United States engineer at the port of Norfolk states that this number is divided as follows:

	Per cent.
Publicly owned.....	1
Government controlled.....	19
Controlled by transportation lines.....	43
Privately owned or controlled.....	37

The publicly owned docks are principally those at the end of Roanoke Avenue and several other street ends, and the wharves or piers so owned accommodate only light-draft vessels or power boats.

The Government controlled or owned docks or piers are those built during the war, or previously constructed by the Government, in addition to some space acquired by agreement, or otherwise, during the national emergency. Some of this latter space, it is believed, will soon revert to commercial use.

The docks or piers controlled or owned by transportation lines are owned outright or operated under a long lease by carriers using same. These transportation piers are the ones generally used in foreign, coastwise, and inland commerce by water.

The percentage of privately owned or controlled piers seems high, but it is a fact that there is a great deal of private wharfage in this harbor, although a very small portion can accommodate deep water traffic—that is, vessels that require 30 to 35 feet depth. The general depth runs from 8 to 25 feet.

MERCHANDISE PIERS.

Norfolk & Western Railway Piers, Lamberts Point.—Pier 1: One-story, wooden, covered warehouse, 140 feet wide, 703 feet long, depth of water in slips 33 feet; two tracks running through center of house, one track outside on apron, north side. Capacity, 52 cars all tracks. Berthing space, four steamers.

Open Pier No. 1: Sixty feet wide, 825 feet long; two tracks; used for handling bulky or heavy materials direct to or from cars to vessels.

Pier 2: Two stories (wooden, covered); 140 feet wide, 709 feet long; depth of water in slips 33 feet. Two tracks running through center of house, one track outside on apron, north side. Capacity 52 cars, all tracks. Berthing space, four steamers.

Pier 3: Fireproof, steel and iron (except wooden flooring) covered; 800 feet long, 222 feet wide; depth of water 30 feet. Two tracks, capacity 40 cars. Berthing capacity, four steamers.

Pier 4: Fireproof, steel and iron (except wooden flooring) covered; 1,200 feet long, 222 feet wide. Two tracks, capacity 60 cars. Depth of water 30 feet. Berthing capacity, four to six steamers.

Norfolk & Western warehouse, at Norfolk (known as Philadelphia warehouse).—Wooden, frame, covered; 260 feet long, 76 feet wide; depth of water 23 feet. Length of pier skirts water front; it is adjacent to local yards of Norfolk & Western Railway at Norfolk.

Southern Railway piers, Pinners Point.—Pier 1: Wooden structure, covered; 202 by 822 feet, including 6-foot apron on each side and 16 feet on front; depth of water in slips 28 feet. Four tracks; capacity 92 cars.

Pier 2: Wooden structure, covered; 278 by 718 feet; depth of water 28 feet. Two tracks, capacity 34 cars.

Pier 3: Wooden structure, covered; 284 by 822 feet, 16-foot apron; depth of water 30 feet. Two tracks on pier, one track on apron; capacity 60 cars.

Pier 4: Wooden structure, covered; 278 by 718 feet; depth of water 35 feet. Same trackage as Pier 3.

Atlantic Coast Line piers, Pinners Point.—Pier 1: Covered warehouse, tracked; 800 by 50 feet; depth of water 30 feet. Berthing space for four steamers.

Pier 2: Covered warehouse, tracked; 838 by 106 feet; depth of water 30 feet. Berthing space for four steamers.

Pier 3: Covered warehouse, tracked; 850 by 76 feet; depth of water 30 feet. Berthing space for four steamers.

Pier 4: 800 by 180 feet. This pier has two sheds or warehouses, one 785 by 61 feet and the other 401 by 73 feet. Each is one story in height and of timber construction.

Seaboard Air Line piers, Norfolk and Portsmouth.—Pier 1: Covered warehouse, wooden, tracked; 400 by 156 feet; depth of water 18 feet. Berthing space for two steamers.

Pier 2: Covered warehouse, wooden, tracked; 400 feet long; depth of water 18 feet. Berthing space for two steamers.

Pier 3: Covered warehouse, wooden, tracked; 400 feet long; depth of water 18 feet. Berthing space for two steamers.

All of these warehouses are served by tracks of this company, either alongside or penetrating such warehouses. Such immediate trackage accommodates 69 cars. In addition to the foregoing, this company has four storage warehouses, the total space of the seven warehouses being approximately 285,350 square feet.

Norfolk Southern Railroad.—Wharf and local warehouse of brick and steel construction, has 45,000 square feet of floor space, 300 by 200 feet; depth of water 18 feet; all traffic being handled between this local (Norfolk) warehouse and the Berkley terminal by barges and car floats.

Berkley terminals: Two covered warehouses, wooden; 250 by 150 feet each; depth of water 18 feet.

Old Dominion Steamship Co.—Three piers, Nos. 1, 2, and 3, 300 by 160 feet, covered, wooden; depth of water 24 feet; berthing space for four steamers. Pier 2 has three sets of tracks penetrating the entire length.

Clyde Steamship Co.—Three piers, wooden, covered; 100 by 75 feet each; depth of water 20 feet. Berthing space for three steamers. Trackage penetrating Pier 1.

Merchants & Miners Transportation Co.—One pier in use, wood construction, covered; 1,000 by 160 feet; depth of water on both sides 24 feet. Berthing space for four steamers. Reached by tracks of Norfolk & Western Railway.

Baltimore Steam Packet Co.—One warehouse, covered (in use by this company); 600 by 160 feet; galvanized-iron structure; depth of water 22 feet in both slips. Berthing space for two steamers.

An adjoining warehouse leased from this company by Libby, McNeill & Libby, is 450 by 120 feet; galvanized iron structure; depth of water 22 feet in slips.

Chesapeake Steamship Co.—Covered, wooden warehouse; 1,000 by 160 feet; depth of water 18 feet. Berthing space for two steamers.

Norfolk & Washington Steamboat Co.—Galvanized-iron covered; 300 by 200 feet; 10-foot apron on all sides; depth of water 20 feet. Berthing space for two steamers.

Chesapeake & Ohio Railway.—Wooden, covered, 550 by 150 feet; depth of water, 20 feet. Berthing space for two steamers.

New York, Philadelphia & Norfolk Railroad.—Galvanized-iron covered; 550 by 150 feet; depth of water 20 feet. Berthing space for three steamers.

Southgate Terminal Pier.—Concrete, fireproof, covered warehouse; 550 by 140 feet; depth of water 30 feet. Is adjoined by a series of three-story, modern, fireproof-unit warehouses, about 400 feet long, containing about 240,000 feet of floor space, and occupied generally by wholesale grocery houses.

United States Army base terminals, Bush Bluff, Norfolk.—Two piers, Nos. 1 and 2, absolutely fireproof, iron, steel, and concrete construction, covered, and with trackage; 1,240 by 300 feet each; depth of water 30 to 35 feet. One pier to be double-decked. These piers, with extensive bulkhead, furnish about 7,000 linear feet available for berthing steamers. Most modern piers and appliances used to date. Served by the Norfolk & Portsmouth Belt Line Railroad, connecting all eight trunk lines. Situated about 1 mile south of the Virginian Railway piers at Sewalls Point.

NOTE (as to municipal piers).—Prior to this country entering the war, this city owned about 375 acres of land at Bush Bluff, which was taken over by the Government; the city had commenced building one unit of five municipal piers, to be approximately 1,500 feet in length by 175 feet width, and it was just after the first pier construction had commenced that the Government had need for this property and took same over; completed the pier already started and constructed a second unit. In turn, the city acquired a considerable acreage, with nearly 2,500 feet of water frontage about three-quarters of a mile north of the property taken by the Government, and immediately adjacent, south, of the Virginian Railway property at Sewalls Point. Since war conditions have changed, and peace is practically assured, the city of Norfolk realizes the necessity of municipal piers at once, and is now determining whether or not the Government will continue use of its present piers at Bush Bluff, or will relinquish all or part of such piers for municipal and commercial purposes before the city will look to the building of new piers on its present property. In any event, municipal piers are assured for the port of Norfolk by reason of dire necessity.

Standard Oil Co.—Accommodations for large vessels, loading cargo and fuel oil; depth of water, 40 feet.

The Texas Co.—Wharf 600 feet long; depth of water, 30 feet; berthing space for large steamers loading cargo and fuel oil.

NOTE.—Similar facilities are now being installed on a large scale by the Gulf Refining Co. and the Mexican Petroleum Co.

Norfolk Cotton Warehouse Corporation.—Covered warehouses and sheds with frontage of about 1,500 feet on river; depth of water, 28 feet; berthing space for about five steamers. Property contains 47 brick and concrete one-story warehouses, with approximately 450,000 square feet of floor space.

Norfolk Iron Works, Water Street.—Wooden, covered, 250 by 100 feet; depth of water, 18 feet.

Security Storage & Warehouse Co.—Pier 200 by 400 feet, on which is located one two-story brick and concrete warehouse 260 feet long and 100 feet wide. In the rear there are two modern six-story fire-proof daylight and storage buildings, one containing about 75,000 square feet and the other 60,000 square feet of floor space. The slips along both sides of the pier have a depth of water approximating 24 feet. This property is located in the section of Norfolk known as Atlantic City. This company has one covered wooden warehouse on East Main Street 300 by 150 feet, with about 20 feet of water depth.

L. J. Upton & Co. (Inc.), wharf.—Covered warehouse, brick, 300 by 150 feet; depth of water, 18 feet.

Colonna's Dock.—Opened, track, 1,200 feet in length; berthing space for four steamers; depth of water, 25 feet.

Imperial Tobacco Co. (formerly Garrett & Co.).—Wharfage space about 150 feet front on water and about 180,000 square feet floor space; depth of water, 18 feet.

Fosburg Lumber Co.—Pier 400 feet long by 180 feet wide; depth of water on both sides, approximately 20 feet.

Seaboard Wharf & Warehouse Co.—Three piers, covered warehouses, wooden, tracked; about 600 feet in length; depth of water, 20 feet; berthing space for two steamers.

Priddy's Dock (C. W. Priddy & Co.).—Covered warehouse 200 feet long, 150 feet wide; depth of water, 18 feet; berthing space for one steamer.

Feuerstein Co. (Inc.).—Manufacturers of ice and dealers in fish and oysters. Pier with frontage of about 150 feet on the river; brick and concrete warehouse thereon, with about 15,000 square feet of floor space.

Comment.—The foregoing covers data on the important merchandise warehouses and piers of transportation lines and those privately owned. As stated, the natural trend of commerce at present is through transportation-owned piers; otherwise, special arrangements have to be made with privately-owned properties for transaction of business in connection therewith.

3. NAMES OF RAILROAD LINES SERVING PORT.

Railroad.	Trackage (miles).	Number of In- dustries.
Atlantic Coast Line R. R.	84	2
Chesapeake & Ohio R. R.	14	20
Norfolk-Southern R. R.	7	40
New York, Philadelphia & Norfolk R. R.	8	5
Norfolk & Portsmouth Belt Line R. R. ¹	34	150
Norfolk & Western Ry.	45	146
Southern Ry.	21	10
Seaboard Air Line Ry.	11	25
Virginian Ry.	5	10
Virginia Ry. & Power Co.	198	(²)

¹ Industrial switching and interchange railroad.² Retail additional.³ Norfolk Street Ry. Co.

4. DRY DOCKING FACILITIES.

Norfolk Marine Railway.—One marine railway, 200 feet long, deadweight lifting capacity, 700 tons; 1 marine railway, 225 feet long, deadweight lifting capacity, 1,000 tons.

Colonna's Marine Railway.—One marine railway, 323 feet long, 40 feet wide, capacity 2,000 tons; 1 marine railway, 210 feet long, 32 feet wide, capacity 1,000 tons; 1 marine railway, 215 feet long, 26 feet wide, capacity 500 tons.

Old Dominion Marine Railway Co.—One marine railway, 275 feet long, 40 feet wide, capacity 2,000 tons; 1 marine railway, 250 feet long, 36 feet wide, capacity 1,000 tons.

Taylor's Marine Railway.—One marine railway, 150 feet long, 34 feet wide, capacity 300 tons; 1 marine railway, 175 feet long, 34 feet wide, capacity 750 tons.

Southern Transportation Co.—One marine railway, 9 feet on blocks, depth 18 to 20 feet; capacity 2,000 tons.

Norfolk Navy Yard.—Has four graving docks capable of caring for largest battleships; has two additional graving docks under construction.

Newport News Shipbuilding & Dry Dock Co.—Located at Newport News, Va., 10 miles west of Norfolk Harbor; graving dock No. 1, 804 feet long, 30 feet depth over sill; graving dock No. 2, 592 feet 8 inches long, 24 feet 8 inches depth over sill; graving dock No. 3, 536 feet 6 inches long, 24 feet depth over sill. Depths at mean high water.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

Twenty-five square miles of anchorage in Norfolk Harbor provides ample space for all classes of vessels; this, in addition to the extensive anchorage grounds in Hampton Roads, provides space for hundreds of vessels. Depth, 12 to 60 feet; a total area for the district of about 75 square miles.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

There is an ample supply of boiler and drinking water of good quality. The prices are from 50 cents to \$2.50 per 1,000 gallons, average \$1.25; boats in stream 75 cents per ton, or \$3 per 1,000 gallons.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Furnished by Virginia Railway & Power Co., from its plant in Norfolk; 11,000, 2,300 and 220 volts, alternating current, 3-phase, 60-cycle, for power; 120 volts, single phase, 60-cycle, for lighting.

8. COALING FACILITIES.

Coal Pier No. 2, Norfolk & Western Railway.—Length, 797 feet; width, 64 feet; method of elevating cars, locomotive incline; number of tracks, 2; height, shore end, 47 feet; height, sea end, 42 feet; chutes, 26; water depth, 33 feet.

Coal pier No. 3, Norfolk & Western Railway.—Length, 867 feet; width, 58 feet; method of elevating cars, locomotive incline; number of tracks, 2; height, shore end, 76 feet; height, sea end, 70 feet; chutes, 62; water depth, 33 feet.

Coal pier No. 4, Norfolk & Western Railway.—Length, 1,200 feet; width, 67 feet; method of elevating cars, car dumpers, dumping coal into special pier cars raised to the top of pier by electric elevators; number of tracks, 2; height, shore end, 90 feet; height, sea end, 90 feet; chutes, 62; water depth, 35 feet. Dumping capacity for the three piers, 100,000 tons per day. This pier is the most modern on the Atlantic seaboard.

Coal pier, Virginian Railway.—Length, 1,325 feet; width, 70 feet; method of elevating cars, electrically driven up incline; number of tracks, 2; height, shore end, 90 feet; height, sea end, 90 feet; chutes, 60; water depth, 33 feet; dumping capacity, 40,000 tons per day.

9. FUEL-OIL FACILITIES.

There are excellent fuel-oil facilities at this port. The Standard Oil Co., at Sewalls Point, has storage capacity of 231,280 barrels, and bunkering capacity of 3,000 barrels per hour, through pipe lines at wharf and one oil barge. The Texas Co., at South Norfolk, has storage capacity of 127,220 barrels, and bunkering capacity of 2,300 barrels per hour, through pipe lines and two barges. In addition to these companies, the Mexican Petroleum Co., the Red "C" Oil Co., and the Gulf Refining Co. have purchased property for the purpose of establishing oil depots, and have begun such developments.

10. CRANE AND DERRICK FACILITIES.

The Norfolk Navy Yard has two cranes, one of which is a floating 150-ton crane.

The Norfolk & Western Railway has a number of mobile cranes.

The Merritt & Chapman Derrick & Wrecking Co. have floating cranes and derricks operating from their terminals.

There is various other hoisting apparatus in the harbor, having a lifting capacity of from 2 to 10 tons.

11. STEAMSHIP LINES AT PRESENT USING PORT REGULARLY.

Coastwise or inland lines.—Baltimore, Chesapeake & Atlantic Railway (Weems Line), Baltimore Steam Packet Co., Bennetts North Carolina Line, Chesapeake Ferry Co., Chesapeake Steamship Co.,

Clyde Steamship Co., Merchants & Miners Transportation Co., Norfolk & Washington Steamboat Co., Old Dominion Steamship Co., Virginia-Carolina Navigation Co., Virginia Navigation Co.

Foreign lines serving port under normal conditions.—The Inter-American Steamship Co., Societe Generale de Transporte, West Indies Steamship Co., Munson Steamship Line, Booth Line, New York & Oriental Steamship Co., American Line, Atlantic Transport Line, Donaldson Line, French Line, Leyland Line, Panama Railroad & Steamship Co., Red "D" Line, Clyde's Coastwise & West India Lines, La Plata Steamship Co., Barber & Co., Furness Withby Co. (Ltd.), United States Shipping Co., Allan Line, Anchor Line, Cunard Line, Fabre Steamship Line, Lambert & Holt Steamship Line, National Steam Navigation Co., of Greece, Quebec Steamship Co., and Scandinavian-American West India Steamship Co.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

The Norfolk & Western grain elevator has a storage capacity of 115,000 bushels, with a loading capacity of 1,200 tons per day, and facilities for loading and unloading vessels. Depth of water, 30 feet.

13. VESSEL CLEARANCES.

	Total number of vessels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Calendar year ending Dec. 31, 1917.....	1,898	2,220	4,879,527	4,129,811

Figures for calendar year 1914 not given.

14. REMARKS.

Norfolk handled a very large war-time commerce, and its increased business still continues. Before the war its foreign commerce was of moderate volume, but it was a leading bunker coal port and had a large coastwise trade.

The terminals are very largely privately owned, as indicated heretofore.

The port administration is under the control of the board of harbor commissioners of the ports of Norfolk, Portsmouth, and Norfolk County, consisting of seven members. The powers of this board include:

(1) The power to establish harbor lines and to control the erection of wharves, piers, and other structures within those lines.

(2) The power to remove obstructions to navigation and to control the dumping of dredged material.

(3) The power to examine all waterfront property and to report upon the condition of the same.

The board appoints annually three harbor masters, who enforce the rules and orders of the board.

PORT AND TERMINAL FACILITIES, PENSACOLA, FLA.**1. CONTROLLING DEPTH OF WATER TO THE SEA.**

The dredged channel over the bar has a minimum depth of water of 30 feet at mean low tide. The minimum width of channel, generally, is 500 feet.

The main channel depth varies from 30 to 56 feet at mean low water. From the center of the city to the open sea is a distance of eight miles.

Mean tidal range is 1.1 feet.

2. BERTHING CAPACITY IN LINEAR FEET.

Linear feet.	Depth (feet).
16,194	28-30
4,123	26
3,200	20
4,000	15-25
1,950	18
1,416	15
1,146	10-20

Warehouse storage on piers 165,800 square feet. Other warehouse storage 61,500 square feet.

Open storage, 30 acres.

Cotton compress storage, 20,000 bales.

Lumber storage, 1,000,000 superficial feet.

Track storage in yards, 1,500 cars.

Trackage on piers, 69,469 linear feet.

3. NAMES OF RAILROAD LINES SERVING PORT.

Louisville & Nashville Railroad.

Gulf, Florida & Alabama Railway.

Pensacola Electric Co. (local).

Gulf Ports Terminal Railroad.

4. DRY DOCKING FACILITIES.

Bruce Dry Dock Co.: Sectional floating wooden dry dock, 175 by 56 feet, 15 feet depth over keel blocks. Lift 1,200 tons. Additional unit being built which will increase lift to 1,600 tons. This company will start work soon on a 5,000-ton floating dry dock.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

Seven and one-half square miles, depth 35 feet and over.

Nineteen square miles, depth 20 feet and over.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Chemist's reports say water is "of great purity, eminently suitable for drinking, steam making, and other purposes."

Water is artesian, supply apparently unlimited, and water plant is municipally owned.

Pumpage now exceeds 3,000,000 gallons daily.

7. QUANTITY AND CHARACTERISTIC OF ELECTRIC CURRENT AVAILABLE.

Pensacola Electric Co.

Power steam generated. Company controlled by Stone & Webster.

Alternating current, 3-phase, 60-cycle, 2,300 volts, 2,800 kilowatts.

Direct current, 525 volts, used only for street railway operation.

8. COALING FACILITIES.

Pensacola has two coal piers, one owned by the Gulf, Florida & Alabama Railroad and the other by the Louisville & Nashville Railroad.

Gulf, Florida & Alabama pier No. 1 has an electrically operated traveling coal derrick with two traveling tipples. The normal capacity of this coal derrick is 600 tons per hour, all coal being handled over conveyer belt from three hoppers, with capacity of 600 tons per hour under normal operations.

The Louisville & Nashville coal pier is known as Muscogee Wharf. This coal dock is 2,440 feet long, with width at sea end of 120 feet. There are on this wharf seven railroad tracks, aggregating 11,600 linear feet, of which five tracks are on the lower level and two tracks are on upper level or coal chute trestle. The arrangement on the wharf is such that vessels can take bunker coal from upper trestle while loading a cargo from lower trestle. This wharf and coal dock has a coal hoist consisting of 2½-ton vertical double bucket hoists, which hoists have a capacity of 210 tons per hour each, or 420 tons combined. Either one or the other or both hoists may be worked at the same time. In addition to the hoists, it has ten coal chutes operated from an elevated coal trestle or wharf and these can be worked anywhere from 100 to 200 tons per hour, according to the cars. These chutes were put on the wharf originally to coal merchant vessels, but in late years, owing to the changed construction of the vessels, they can not be well operated on account of not being high enough when vessels come in light and stand out of the water. One of these chutes, however, is of the telescoping variety and can be raised or lowered to suit the vessel, and will coal up to 30 feet above water. The coal hoists will raise coal 50 feet above water and were installed recently to take care of the more modern vessels.

In addition, there are two cargo wharves, Tarragona Street Wharf and Commendencia Street Wharf, which can also handle bunker coal.

On Tarragona Street Wharf the arrangement is such that a vessel can take cargo from both levels or can load bunker coal from the upper level while receiving or discharging cargo direct from ship to cars or ship to warehouse, from the lower level.

Commendencia Street Wharf is so designed that vessels may receive or discharge cargo from the upper and lower tracks simultaneously, thus insuring the quickest possible handling of cargoes. Vessels may discharge or receive cargo and take on bunker coal at the same time.

It is deemed advisable to remark that when vessels call for bunker coal at Pensacola they are assessed for only half harbor dues and \$5 for each move; pilotage \$2.25 per foot draft each way, which is less than half pilotage. When vessel comes in coastwise for bunkers and does not remain in port over 24 hours, it is not necessary that she enter and clear at the custom house.

9. FUEL-OIL FACILITIES.

There are no regular fuel oil piers in the city, but the United States Navy submarines have had no trouble in coming alongside piers and taking oil direct from tank cars.

Three of the large oil companies, viz, Standard Oil Co., Gulf Refining Co., and The Texas Co. have branch offices and warehouses in Pensacola, and the Gulf Refining Co. is located a block from the waterfront to which oil pipe line could be run to load direct to vessels.

The Texas Co. has begun work on a great fuel oil station in Pensacola. There will be two 64,000-barrel storage tanks, with pipe lines for receiving oil from, and supplying it to, ships. The pier will be 30 feet wide and will extend from a point on the west side of Clubbs Street approximately 1,830 feet south of the center line on Main Street and southerly along the western line of Clubbs Street a distance of 410 feet, thence in a southeasterly direction a distance of 600 feet.

10. CRANE AND DERRICK FACILITIES.

The Gulf, Florida & Alabama Railroad has a traveling steam locomotive crane of 20 tons capacity which is assigned for use at their marine terminals at all times, also an American ditcher, operated by steam, 10 tons capacity, which is available for emergency use. They have no magnet equipment or floating derricks, but are equipped with special devices for the rapid handling of shells and other war materials.

The Louisville & Nashville Railroad owns three steam cranes: One 15-ton steam crane, one 8-ton steam crane, one 2-ton steam crane. Have no other steam or electrically-operated cranes, magnet equipment, or floating derricks.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

Pensacola, St. Andrews & Gulf Steamship Co., to Mobile and Apalachicola.

Mengel & Co. (import mahogany) to West Coast Africa and British Honduras.

Mexican-Gulf Steamship Co., to Cuban ports.

The following lines operating before the war now have only partial, or entirely suspended service:

Serra Steamship Line, to Liverpool.

Leyland Line, to Liverpool and London.

Harrison Line, to Liverpool.

Creole Line, to Mediterranean ports.

Gans Line, to Rotterdam, Hamburg, and Antwerp.

Munson Line, to South America.

Austro-American Line, to Trieste.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

None.

13. VESSEL CLEARANCES.

	Total number of vessels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Fiscal year ending June 30, 1914.....	261	71	458,972	196,021
Fiscal year ending June 30, 1918.....	173	46	118,687	103,177

14. REMARKS.

The port is administered by a board of pilot commissioners and a harbor master, both appointed by the governor of Florida.

Loading is direct from rail to ship, and depth of water at principal piers is sufficient for largest freighters to berth alongside—28 to 30 feet.

Pensacola is the principal mahogany import port on the Gulf, and alternates with Mobile and Gulfport as the leading yellow-pine lumber and timber export point. It also exports quantities of cotton and naval stores.

It is estimated that the terminals can handle three times their present business. Piers are connected with each other, and with all railroads, by terminal trackage of the Pensacola Electric Co.

PORT AND TERMINAL FACILITIES, PHILADELPHIA, PA.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

A 30-foot channel at mean low water exists at the present time from Philadelphia to the sea. A 35-foot channel is authorized, and about two-thirds completed.

Philadelphia is 101.68 miles from the sea, measured from Market Street. It is 61 miles from Philadelphia to Delaware Bay.

The mean tidal range is 6 feet.

2. BERTHING CAPACITY IN LINEAR FEET.

26,918 feet, 18–22 feet depth at mean low water.

20,621 feet, 22–26 feet depth at mean low water.

26,228 feet, 26–28 feet depth at mean low water.

12,914 feet, 28–30 feet depth at mean low water.

General cargo piers, coastwise trade, 10.

General cargo piers, river and bay trade, 2.

General cargo piers, foreign trade, 33.

Coal cargo piers, 12.

Ore cargo piers, 4.

Grain cargo piers, 3.

Lumber cargo piers, 6.

Miscellaneous cargo and industrial piers, 13.

Railroad water-front freight stations, 11.

3. NAMES OF RAILROAD LINES SERVING PORT.

Pennsylvania Railroad Co.

Philadelphia & Reading Railway Co.

Baltimore & Ohio Railroad Co.

Philadelphia Belt Line Railroad Co. (local).

4. DRY DOCKING FACILITIES.

United States Navy dry docks.—Graving dock, 459 feet, 10 inches long, 23 feet, 4 inches depth on sill; graving dock, 731 feet, 10 inches long, 30 feet depth on sill; graving dock, 1,005 feet long, 39 feet, 11 inches depth on sill.

Kensington Shipyard Co.'s dry dock (adjacent to Cramps's ship yard).—Extreme length, 432 feet; length at bottom, 412 feet; breadth at entrance, 70 feet; depth on sill, 20 feet.

Philadelphia Ship Repair Co.'s floating dock.—Length, 250 feet; breadth at entrance, 86 feet; depth on sill, 17 feet; lifting power, 3,500 tons.

Philadelphia Ship Repair Co.'s pontoon dock.—Extreme length, 184 feet; breadth at entrance, 85 feet; depth on sill, 16 feet; lifting power, 1,400 tons.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

At Port Richmond, 200 acres, 12–28 feet.

At Fort Miffln, 63 acres, 18–30 feet.

At Marcus Hook, 225 acres, 20–30 feet.

At League Island, 77 acres, 22–34 feet.

At Greenwich Point, 232 acres, 15–40 feet.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Abundant supply of filtered river water available for drinking purposes of excellent quality and purity.

Vessels fill their boilers from the stream.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Electric power furnished by the Philadelphia Electric Co. Alternating, 220-volt, 2 and 3 phase, 60-cycle. Direct, 220-volt.

8. COALING FACILITIES.

	Depth.	Car capacity.
Philadelphia & Reading Piers:	<i>Feet.</i>	
Pier 18, Port Richmond.....	28–30	64
Pier 16, Port Richmond.....	22	30
Pier 13, Port Richmond.....	23	12
Pier 12, Port Richmond.....	15–16	15
Pier 11, Port Richmond.....	26	24
Pier 10, Port Richmond.....	14–18	12
Pennsylvania R. R. Piers:		
Pier 1, Greenwich Point.....	10–12	40
Pier 2, Greenwich Point.....	12	40
Pier 3, Greenwich Point.....	12–26	1 3,000
Pier 4, Greenwich Point.....	24–26	44
Pier 6, Greenwich Point.....	26	36
Baltimore & Ohio R. R. Pier:		
Pier 81, South Delaware.....	14–15	24

¹ Tons per hour.

9. FUEL OIL FACILITIES.

There is every facility both at Point Breeze in the port of Philadelphia and at Marcus Hook for the supply of fuel oil burning vessels with the necessary products.

10. CRANE AND DERRICK FACILITIES.

There are 28 floating derricks from 3 to 65 tons capacity; 1 floating revolving guyed cantilever crane; main hoist 100 tons, auxiliary 30-ton capacity, 270-degree swing; 13 McMyler clamshell bucket derricks, for coal or sand, capacity of each, 60 tons per hour; 13 wharf traveling cranes, gantry cranes, and derrick of from 1 to 50 tons capacity.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

The Department of Commerce publication, Ports of the United States, gives the following list of the principal trans-Atlantic and coastwise lines that call regularly at the port of Philadelphia, except as interrupted by the European War.

Lines.	Outbound service to—
Allan Line.....	Glasgow.
American Levant Line.....	Smyrna, Alexandria.
American and Indian Line.....	Inbound from Bombay, Calcutta.
American-Hawaiian Line.....	Inbound from Hawaiian Islands via Panama.
American Line.....	Liverpool, Queenstown.
Atlantic Fruit Co.....	Jamaica and other points.
Atlantic Transport Line.....	London.
Austro-American Line.....	Trieste, Fiume.
Bombay-American Line.....	Inbound from Bombay.
Clay Line.....	Inbound from Fowey.
Clyde Line.....	Norfolk, Newport News, New York.
Cuneo Importing Co.....	Jamaica.
Furness Line.....	Leith, Middleboro.
Great Northern Paper Co.....	Stockton Springs, Me.
Hamburg-American Line.....	Hamburg.
Hansa Line.....	Inbound from Calcutta.
Holland-American Line.....	Rotterdam.
Italia Line.....	Naples, Genoa.
Luckenback Steamship Co.....	San Francisco and Pacific coast ports via Panama Canal.
Manchester Line.....	Manchester.
Merchants & Miners' Transportation Co.....	Jacksonville, Savannah, Boston.
Munson Line.....	Irregular service.
North German Lloyd Steamship Co.....	Inbound from Calcutta.
Philadelphia Transatlantic Line.....	London.
Philadelphia-New Orleans Transportation Co.....	New Orleans, Charleston.
Red Star Line.....	Antwerp, Dover.
Scandinavian-American Line.....	Christiania, Copenhagen.
Sota and Aznar.....	Inbound from Spanish ports.
Southern Steamship Co.....	Tampa, Key West, Jacksonville, Charleston.
Sweden & Norway Steamship Line.....	Christiania, Goteborg.
United Fruit Co.....	Jamaica, West India ports.
In addition are the following oil lines:	
Atlantic Refining Co.....	English and other European ports.
Gulf Refining Co.....	Inbound from Port Arthur, Tex.
Pure Oil Co.....	New York.
Sun Co.....	English and other European ports.
Texas Co.....	Inbound from Port Arthur, Tex.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

There are two grain elevators at Philadelphia. One at Port Richmond, operated by the Philadelphia & Reading Railway Co., with a capacity of 1,000,000 bushels, and the other at Girard Point, at the mouth of the Schuylkill River, operated by the Pennsylvania Railroad Co. The latter elevator is a modern concrete structure, located 200 feet inland from the dock. The grain is delivered to the ships for export by means of a conveyor gallery, containing four conveyor belts, each having a capacity of 15,000 bushels per hour, which can be delivered either side of the pier through dock spouts into the hatches of a vessel. Three ocean-going steamships can be loaded simultaneously, the dock being on one side 900 feet and on the other side 450 feet in length; there being ample depth of water for vessels up to 30-foot draft. The total capacity of this elevator is 2,225,000 bushels. The track layout in the elevator yard will accommodate 1,400 cars. The elevator proper has a receiving capacity of 240 cars per day of 10 hours.

13. VESSEL CLEARANCES.

	Total number of vessels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Fiscal year ending June 30, 1914.....	1,287	4,311	2,844,372	4,297,210
Fiscal year ending June 30, 1918.....	1,093	2,036	2,897,365	2,283,591

14. REMARKS.

The department of wharves, docks, and ferries reports that while the city piers are being used to their full capacity, the railroad piers can handle a hundred per cent more traffic than is going over them at present. Jurisdiction over the water front in the city is vested in the department of wharves, docks, and ferries, and the director of this department, who is appointed by the mayor, has large executive powers. He can condemn and improve wharf property, operate dredge plants, ice boats, etc. This department now has an appropriation of \$14,000,000 to be used for harbor and terminal improvements. All wharf property on the Delaware River outside of Philadelphia is under the control of five commissioners of navigation, who also have power to make regulations covering the stationing and anchoring of ships within the limits of the State of Pennsylvania and to license and regulate Pennsylvania State pilots.

PORT AND TERMINAL FACILITIES, PORT ARTHUR, TEX.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Channel 27 feet minimum depth, mean low water; 150 feet minimum width; 16.8 miles long, to Gulf of Mexico.

Tidal range on entrance bar, 18 inches.

Tidal range within harbor, 12 inches.

2. BERTHING CAPACITY IN LINEAR FEET.

Eleven thousand eight hundred and seven linear feet total, with 26 feet of water alongside, as follows: Port Arthur Canal & Dock Co.'s terminals consists of the following:

Warehouse No. 1 (three sections), 1 section 90 by 700 feet; 1 section 106 by 294 feet; 1 section 90 by 140; cotton shed 90 by 1,148 feet 3 inches. Total dimensions of pier on which these are located, 130 by 2,842 feet. Car capacity, 90 cars.

Oil cake shed, 42 by 809 feet; elevator wharf, 22 by 576 feet. Total length of pier on which these are located, 1,860 feet. Car capacity, 55 cars.

Warehouse No. 2, 90 by 700 feet. Warehouse No. 3, 90 by 698 feet. Dimensions pier, including sheds, 114 by 1,500 feet. Car capacity, 30 cars. Dock equipped with depressed tracks for handling car to ship.

Lumber dock shed, 117 feet 5 inches by 812 feet. Lumber dock shed, 117 feet 5 inches by 420 feet. Dimensions of pier, including sheds 182 feet 5 inches by 1,765 feet. Car capacity, 85 cars.

Timber basin, 1,000 by 250 feet.

Total linear feet wharfage, 7,407 feet.

Terminal trackage, 27 miles.

Trucks and equipment for handling cargoes owned by stevedores, who have ample equipment.

The Texas Co. operates its own water terminal, which is one of the most modern in the country. Conveyor system is used for handling case oil from warehouses to ship's hold, in addition to complete piping system for loading bulk oil. The length of the dock is 2,200 feet.

The Gulf Refining Co. also owns its own water facilities, and is completely equipped for loading bulk oil. Can bunker 10 vessels per day. Its docks are of concrete, 2,200 feet in length.

There is a total of 282,984 square feet of terminal warehouse storage and 281,874 square feet of terminal shed storage.

3. NAMES OF RAILROAD LINES SERVING PORT.

Texas & New Orleans Railway.

Texarkana & Fort Smith Railway.

4. DRY DOCKING FACILITIES.

There are no dry docks or marine railways.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

Very small area available for anchorage in turning basins or channels. Not room for over four or five vessels.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Unlimited supply city water for drinking; not good for boiler purposes. Trifle salty.

Excellent fresh boiler water, free from salt, may be secured from Sabine Ice Water and Towing Co. barges, with capacity pumping unit of from 30 to 100 tons per hour.

Motive power for barges consists of seven tugs. Price, boiler water, $\frac{1}{2}$ cent per gallon of 231 cubic inches. Immediate delivery can be made on quantity up to 1,000 tons. Deliveries made day or night. Ice, \$10 per ton.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Quantity, 9,800 kilowatts. Characteristics, alternating current, 2-phase, 60-cycle, 2,200-220-110 volts; Port Arthur Light & Power Co.

8. COALING FACILITIES.

No coaling facilities of any magnitude.

9. FUEL OIL FACILITIES.

Fuel oil in any quantity desired. Gulf Refining Co. and the Texas Co. have contracts with United States Government. Capacity for bunkering: Gulf Refining Co., 10 vessels per day; the Texas Co. can bunker 6,000 gallons every two hours, six vessels at one time.

10. CRANE AND DERRICK FACILITIES.

Floating derricks, with lifting capacity of from 30 to 40 tons, owned by private companies. No other cranes or derrick facilities.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

No steamship lines maintain regular schedules out of this port at present.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

Elevator capacity, 500,000 bushels. Can handle grain as fast as ship can be trimmed; normally, 150,000 bushels per day.

13. VESSEL CLEARANCES.

Information not furnished.

14. REMARKS.

Port Arthur has practically no organized port administration. In fact, all the terminals are outside the city limits and are privately owned. There is a small municipal wharf available for light-draft vessels only. This is almost entirely an oil port, 90 per cent of its business being outgoing coastwise and foreign oil cargo from the Texas, Oklahoma, Arkansas, and Louisiana fields. Unloading is direct from rail to ship.

PORT AND TERMINAL FACILITIES, PORTLAND, ME.**1. CONTROLLING DEPTH OF WATER TO THE SEA.**

Thirty-five-foot depth at mean low water; average tidal range in harbor, 8.8 feet. No bar.

2. BERTHING CAPACITY IN LINEAR FEET.

Wharves available at the present time for the accommodation of trans-Atlantic steamers are those controlled by the Grand Trunk Railway System and by the Portland Terminal Co. The Grand Trunk Railway wharves are modern and well equipped, consisting of eight wooden covered piers, the largest of which is 426 feet long and 110 feet wide, the smallest being 348 feet long and 121 feet 6 inches wide.

Cross sheds connect all of these piers. Piers Nos. 1, 2, and 3 are connected by a shed 303 feet 6 inches long by 71 feet wide. Piers 4, 5, and 6 are connected by shed measuring 265 feet 2 inches long and 100 feet wide. Wharves 7 and 8 are connected by shed 290 feet long by 121 feet 6 inches wide.

The depth of the water in the slips and at the ends of these piers is 35 feet mean low tide. These berths have been dredged to that depth in order to equalize depth with the main ship channel, which is now being dredged to 35 feet at mean low tide.

These terminals have a track capacity of 100 cars, 87 of which can be worked at the same time. These tracks are alongside the terminal sheds and are not covered, the freight being loaded or unloaded from and to the platform of each shed and directly into the covered sheds.

The tracks located at the sheds of the Portland Terminal Co. are open and are of the following capacity:

	Cars.
Tracks at No. 1 wharf.....	110
Tracks at No. 2 wharf.....	102
Tracks at No. 3 wharf.....	134
Tracks at No. 4 wharf.....	72

As previously stated, the terminals of the Portland Terminal Co. are used wholly for the handling of bulk commodities such as coal, sulphur, china clay, and pulp wood.

3. NAMES OF RAILROADS SERVING THE PORTS.

Grand Trunk Railway Co., Boston & Main Railroad Co., and Maine Central Railroad Co., the latter two constituting the Portland Terminal Co.

The Grand Trunk wharves are utilized only for about five to six months each year, the remainder of the year lie idle.

Wharves at this port, which could be utilized for export and import business, are very advantageously located with reference to the rail lines serving the port, particularly the Grand Trunk Railway. The Portland Terminal Co., controlled jointly by the Boston & Maine and Maine Central Railroads, has direct physical connection with these Grand Trunk wharves.

4. DRY DOCKING FACILITIES.

One 2,500-ton marine railway.

5. ANCHORAGE AREA AVAILABLE WITHIN THE HARBOR.

Available anchorage area $\frac{1}{2}$ by $\frac{3}{4}$ of a mile, with water varying in depth from 30 to 59 feet.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Unlimited supply of pure water at very reasonable cost.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Cumberland County Power & Light Co. supplies current for light and power in Portland and vicinity. Present generating capacity, 16,800 kilowatt, output being about 60,000,000 kilowatt hours per year.

Electric energy for power and lighting purposes is distributed to Portland and vicinity by means of primary circuits carrying a voltage of 2,300, 60-cycle, 3-phase alternating current. Secondary circuits installed and arranged to provide customers with voltage desired.

8. COALING FACILITIES.

There are located at this port the following coal-handling plants:

	Bunker- ing per hour.	Rail dis- charge per hour.	Length wharf.	Depth along- side.
	<i>Tons.</i>		<i>Feet.</i>	
Randall & McAllister.....	100	250	750	28
Pocahontas Fuel Co.....	400	400	450	25
Portland Terminal Co. No. 1.....		500	800	30
Grand Trunk.....		400	450	26
A. R. Wright Co.....		150	400	18½
Lehigh Coal & Navigation Co.....		120		30
Portland Terminal Co. No. 2.....		250	350	30

Total storage capacity of all plants, 67,500 tons.

The port handled during the calendar year 1916, which are the latest figures furnished, 1,511,168 net tons of coal.

9. FUEL OIL FACILITIES.

The plant of the Mexican Petroleum Oil Co., located on the South Portland Harbor side, consists of 4 tanks, 3 of which have a capacity of 55,000 barrels each, and one of 35,000 barrels, making the combined capacity of the tanks 200,000 barrels.

The wharf owned by this company, at which their steamers dock to discharge cargoes of oil, is 580 feet long, of which length but 450 feet is dredged to a maximum depth of 25 feet.

This company is equipped with the necessary pipe line and pumps for use in bunkering steamers with oil from the tanks, and they are able to bunker at the rate of 4,000 barrels per hour. In connection with the fuel-oil bunkering facilities, it might be well to state that at this time, particularly during the past year, several foreign ships have been docked at the oil company's wharf and have taken on large quantities of the commodity for bunkering purposes.

10. CRANE AND DERRICK FACILITIES.

None.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

November 1 to May 15, inclusive:

Donaldson Line to.....	Glasgow.
Cunard Line to.....	London.
Thompson Line to.....	Leith.
Thompson Line to.....	Bordeaux.
White Star Line to.....	Liverpool.
White Star Line to.....	Bristol.
Eastern Steamship Co. to.....	Boston.
Eastern Steamship Co. to.....	New York.
Eastern Steamship Co. to.....	St. Johns, New Brunswick.
Maine Coast Transportation Co. to.....	Boston.

No foreign steamers use this port regularly throughout the entire year. During the period from approximately November 1 to May 15, when the St. Lawrence River is closed to navigation on account of ice, this port is used extensively by the White Star Dominion Line, and the Robert Reford Co., the latter operating the Cunard-Thompson Line and the Donaldson Line. The Robert Reford Co. also acts as agent for the various steamship lines transporting shipments for the Belgian Relief Commission.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

The Grand Trunk Railway owns two grain elevators with a combined storage capacity of 2,500,000 bushels; 36,774,144 bushels of grain were exported through this port in the calendar year 1916.

13. VESSEL CLEARANCES.

	Total number of vessels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Fiscal year ending June 30, 1914.....	203	(¹)	483,750	(¹)
Fiscal year ending June 30, 1918.....	182	(¹)	512,606	(¹)

¹ Not available.

14. REMARKS.

Portland is the winter harbor for the Grand Trunk Railway, and is used extensively during the period extending from November 1 to May 15. It is practically idle during the other months of the year.

It is a large petroleum import and grain export point. Also receives coastwise, and distributes, quantities of coal. Ice never interferes with navigation.

Control of harbor is vested in a State board known as the commissioners of harbor and tidal waters of Portland. Pilotage is not compulsory.

PORT AND TERMINAL FACILITIES, PORTLAND, OREG.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Minimum depth at mean lower low water:	Feet.
August to October, inclusive.....	26
November to February, inclusive.....	28
March to July, inclusive.....	30
Length of channel, 110 miles; minimum width.....	300
At the mouth of the Columbia River (Columbia River Bar), the entrance channel has a depth of 41 feet for a width of 2,500 feet at mean lower low water.	
Tidal range on bar.....	7½
Tidal range in harbor, at low water stages.....	2½

2. BERTHING CAPACITY IN LINEAR FEET.

Depth (feet).	Linear feet.
13	410
18-24	1,875
25-27	1,625
28-31	8,797
33-50	6,977

There are 8 open lumber docks, 4 open fuel docks, 8 shedded grain docks, 11 shedded general cargo docks, and 7 shedded river steamer docks.

Four of the general cargo docks with 4,025 linear feet of berthing space on 29-33 feet of water are municipally owned.

There is open storage space, including that available on docks, of 1,095,640 square feet, and shedded storage space, including that available on docks, of 2,340,700 square feet.

No figures furnished of track storage available.

3. NAMES OF RAILROAD LINES SERVING PORT.

Union Pacific Railway; Southern Pacific Railway; Northern Pacific Railway; Great Northern Railway; Spokane, Portland & Seattle Railway; Oregon Electric Railway; and Portland Railway, Light & Power Co. (local).

4. DRY DOCKING FACILITIES.

The port has one dry dock. It was constructed and is operated by the port of Portland. It is a sectional, floating dock of 10,000 tons dead-weight lifting capacity. Its length is 468 feet, inside width 82 feet, and depth over keel blocks 25 feet at low water. The dock is equipped with electric derrick of 25 tons capacity and compressed air and electricity for operation of tools.

It is reported, under date of March 24, 1919, "that the new commissioners of the port of Portland, cooperating with the commissioners of public docks, have definitely decided to build a new 12,000-ton dry dock at a cost of approximately \$1,000,000. It has not been decided whether wood or reinforced concrete will be used, but the work will be pushed to completion during the coming year."

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

(a) From Broadway Bridge to head of Swan Island, 8,000 feet. Approximate area 165 acres. Depths 28 to 33 feet.

(b) From foot of Swan Island to lower limits of the city, a short distance below the St. Johns municipal terminal, 21,000 feet. Approximate area, 500 acres. Depths, 25 to 33 feet.

Anchorage in above areas subject to ship channel fairway. No anchorage is figured above the Broadway Bridge.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

(a) Source: Bull Run Lake and River, base of Mount Hood.

(b) Intake capacity at head gates, 65,000,000 gallons every 24 hours.

(c) Reservoir storage capacity in city, 190,000,000 gallons. Maximum use, less than 40 per cent.

(d) Purest soft mountain water.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Portland Railway, Light & Power Co., Portland, Oreg.:

(a) Developed hydroelectric, 80,000 horsepower.

(b) Developed steam, 33,950 horsepower.

(c) Alternating and direct in business district; elsewhere, alternating.

(d) Voltage, 33,000 and 57,000 volts. Distribution lines 11,000, 2,300, 480, 240, and 120, 3 or single phase, 60 cycle.

Northwestern Electric Co., Portland, Oreg.:

(a) Developed hydroelectric, 20,000 horsepower.

(b) Developed steam, 7,500 horsepower.

Under construction steam, 10,000 horsepower.

(c) Alternating and direct in business district; elsewhere, alternating.

(d) Voltage, 66,000 volts. Distribution lines 11,000, 2,300, 480, 240, and 120, 3 or single phase, 60 cycle.

8. COALING FACILITIES.

Pacific Coast Coal Co. owns and operates the fixed mechanical coaling facilities of the port.

This plant has a berthing space of 305 feet with overlapping privileges on adjoining docks, thus insuring a full berth for any length of vessel.

It is a gravity discharge elevator and ship-loading plant with a capacity of 300 tons per hour, loading from 5,000 ton storage bunkers, with reserve ground storage of 10,000 tons.

It is a duplicate of the two coaling plants now in use in Seattle. The port of Portland owns and operates a coal storage dock of 10,000 tons capacity.

Vessels are frequently coaled from barges, by the use of donkey scow, when vessel is at berth discharging or taking on cargo.

9. FUEL OIL FACILITIES.

	Barrels.
Associated Oil Co.:	
Crude oil storage.....	160,000
Refined oil storage.....	10,260
Standard Oil Co.:	
Crude oil storage.....	64,913
Refined oil storage.....	75,999
Union Oil Co. of California:	
Crude oil storage.....	88,000
Refined oil storage.....	20,000

10. CRANE AND DERRICK FACILITIES.

(a) One 20-ton steam locomotive crane, at Fifteenth Street municipal terminal.

(b) One 15-ton and one 40-ton steam locomotive crane at St. Johns municipal terminal.

(c) One 35-ton, electrically operated, stiff-leg derrick, 97-foot boom, at Albina dock.

(d) One 60-ton sheer leg, two 15-ton derricks, and one 5-ton traveling crane with two booms, all electrically operated, and one 15-ton steam locomotive crane at the Willamette Iron & Steel Works.

(e) One 75-ton sheer leg and one 10-ton locomotive crane, both steam, at Pacific Marine Iron Works.

(f) One 75-ton sheer leg and one traveling circular crane, 4 to 6 ton capacity, both electrically operated, at the Columbia River Ship Building Corporation.

(g) One 60-ton sheer leg, one 25-ton derrick, and one 15-ton locomotive crane, all steam operated, at Peninsula Shipbuilding Co.

(h) One 25-ton electrically operated derrick at the port of Portland dry dock.

(i) One magnet equipment for spikes, etc., at Northwest Steel Co.

(j) There are seven floating derricks, used by sand and gravel companies and fitted with clamshell buckets of 1½ and 2½ yard capacity; three of these are of 10-ton, three of 5-ton, one of 20-ton capacity.

The barges, on which the derricks are mounted are generally of the dimensions 36 by 120 feet.

11. STEAMSHIP LINES AT PRESENT USING PORT REGULARLY.

The only steamship lines at present using the port regularly are:

(a) San Francisco and Portland Steamship Co.

(b) Parr-McCormick Steamship Co.

(c) Pacific Steamship Co., coast service; Pacific Steamship Co., oriental service.

There are, in addition, coasting vessels engaged in the lumber-carrying trade, with return cargoes of cement, merchandise, etc.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

The Globe Grain & Milling Co. own and operate a concrete, fire-proof grain elevator of 250,000 bushel capacity and, in connection therewith, also operate a two-level dock for the handling of sacked grain to the amount of 11,500 tons.

The Portland Flouring Mills Co., the Crown Mills, Albers Bros. Milling Co., and the Jones and Columbia Mills, have grain storage tanks in connection with their milling business.

A municipal grain elevator of fireproof construction and 1,048,600 bushel storage capacity is now being constructed by the commission of public docks at the St. Johns municipal terminal. All contracts for its construction, machinery, etc., have been let and the work is well under way. It is expected to be completed in August, 1919. This elevator will be one of the most modern in this country, and its capacity will be increased to 2,000,000 bushels when the demand therefor is apparent.

13. VESSEL CLEARANCES.

	Total number of vessels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Fiscal year ending June 30, 1914.....	134	1,005	292,555	1,243,096
Fiscal year ending June 30, 1918.....	42	591	65,291	731,172

14. REMARKS.

The commission of public docks is the municipal organization under whose jurisdiction and supervision comes the improvement of the water-front facilities of the port, both municipal and private. The commission's duty is also to examine into and promote the best interests of the port and to recommend improvements to be undertaken by the municipality. According to figures submitted by it, the Portland terminals can handle double their present business. These are excellent modern terminals, with up-to-date freight handling appliances.

Portland is the principal river harbor on the Pacific coast, and occupies an excellent strategic position, as the Columbia River and its tributaries form the most important river system on this coast, and the only natural low-grade highway through the Sierra and Cascade Mountain Ranges. As a consequence, it has a large and growing business.

PORT AND TERMINAL FACILITIES, PROVIDENCE, R. I.**1. CONTROLLING DEPTH OF WATER TO THE SEA.**

Thirty-foot depth at mean low water.
Channel 600 feet wide, 27 miles long, to Atlantic Ocean.
Mean tidal range, 4.7 feet.

2. BERTHING CAPACITY IN LINEAR FEET.

State pier No. 1, 600 by 120 feet, with shed 400 by 110 feet, 30 feet of water alongside.

Sixty-six private wharves of various sizes and water depths, not given specifically.

Extensive cold storage for export products available.

Three thousand-foot quay wall, filled behind, covering 210 acres, to be made into extensive and well equipped terminal with railroad trackage and heavy traveling cranes; 30 feet of water alongside; 1,365-foot berthing space now available.

Merchants & Miners Wharf, 1,200 feet, 20-foot depth.

Northeastern Navigation Co. 600 feet, 20-foot depth.

3. NAMES OF RAILROAD LINES SERVING PORT.

New York, New Haven & Hartford.

Connection with Grand Trunk at Palmer, Mass., planned through extension of Southern New England Railway.

4. DRY DOCKING FACILITIES.

One 3,200-ton marine railway under construction by Marine Engineering & Dry Dock Co.

One 2,500-ton marine railway under construction at South Somerset.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

Harbor one-half mile long by one-fifth to one-fourth mile wide; 25 to 30 feet of water. No more definite statement at hand. Ample anchorage anywhere between harbor and ocean.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

All water filtered.

"Of exceptionally good quality. Furnished to ships by pipes at wharves or by water boats."

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

One hundred and thirty-one thousand five hundred horsepower available, which is being increased by installation of turbine to develop additional 60,000 horsepower. Alternating, 3-phase, 60-cycle, 2,300 down to 110 volts. Direct, 550 volts.

8. COALING FACILITIES.

The port handled in 1916, 2,813,772 short tons of coal.

There are six coal discharging plants with a depth of 22 feet or over of water alongside as follows:

	Depth of water.	Berth- ing.	Capacity per hour.
	<i>Feet.</i>	<i>Feet.</i>	<i>Tons.</i>
Providence Gas Co.....	22	600	50
Narragansett Electric Lighting Co.....	23	300	90
Seaconnet Coal Co.....	23	350	200
Curran & Burton (Inc.).....	26	400	350
Darrow-Mann Co.....	30	500	300
Wilkesbarre Pier.....	30	400	400

There are 13 plants with less depth of water alongside, which have a total capacity of 1,135 tons per hour.

The total storage capacity of all the plants is: Pocket storage, 60,800 tons; ground storage, 287,200 tons.

9. FUEL OIL FACILITIES.

Mexican Petroleum Co., Allens Avenue and Kettle Point: 2,500 feet berthing space, 26 feet mean low water, to be dredged to 30 feet. Total storage capacity, 257,500 barrels; total bunkering capacity, per hour, 1,000 barrels.

Texas Co., Allens Avenue: 2,600 feet berthing space, 24 and 28 feet, mean low water. Total storage capacity, 163,800 barrels; total bunkering capacity, per hour, 1,100 barrels.

Gulf Refining Co.: One berth, 450 feet, 25 feet of water, mean low water. Total storage capacity, 225,000 barrels; total bunkering capacity, per hour, 3,000 barrels.

Standard Oil Co.: Plant being constructed which will make Providence the most important oil distributing port on Atlantic seaboard. Property has a frontage of 2,800 feet along Providence River.

10. CRANE AND DERRICK FACILITIES.

Packard Dredging Co.: One lighter, Mount Hope, 80 feet long, 32 feet wide, 9 feet water; 140-200 tons capacity, quarters for 8 men; 61 by 30 deck space, 10,000-gallon tank, 40-foot A frame, 55-foot boom, 8 tons capacity. One contractor's lighter, 85 feet long, 30 feet wide, 50-foot A frame, 60-foot boom; no cargo capacity.

J. J. Orr: One derrick lighter, 110 feet long, 30 feet wide, 6 feet water, 250-ton capacity, quarters for 8 men, 75-foot A frame, 87-foot boom, 10-12 tons capacity of boom. One derrick lighter, 100 feet long, 30 feet wide, 4 feet water, 200 tons capacity; 50-foot mast, 42-foot boom, 5 tons capacity.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

Fabre Line to Naples, Marseilles, Cape Verde Islands, and New York.

Colonial Navigation Co. to New York.

Hartford and New York Transportation Co. to New York.

New England Navigation Co. to New York.

Merchants and Miners Transportation Co. to Baltimore.

Dyer Transportation Co. to Fall River.

Block Island, Newport & Providence Steamship Co.

Providence, Fall River & Newport Steamship Co.

Coal ships and barges from Newport News, Baltimore, Norfolk, and other coal ports. Oil vessels from Port Arthur.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

None.

13. VESSEL CLEARANCES.

Information not furnished.

14. REMARKS.

Needs more than anything else completion of Southern New England Railway, subsidiary of the Grand Trunk, from Palmer, Mass., to Providence, giving new trunk line to Canada and the West. Is largest New England oil-distributing port, has many thousands of square feet of warehouse storage capacity and track storage for several thousand cars. Can handle considerably more business than at present.

PORT AND TERMINAL FACILITIES, SAN DIEGO, CAL.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

San Diego is located on San Diego Bay, about 10 miles north of the boundary between the United States and Mexico and 9 miles from the Pacific Ocean.

Depth of water in the entrance channel 35 feet.

Depth within the harbor 35 to 75 feet.

Tidal range within the harbor is 8 feet.

2. BERTHING CAPACITY IN LINEAR FEET.

	Berth- ing ca- pacity.	Depth of water.		Berth- ing ca- pacity.	Depth of water.
	<i>Feet.</i>	<i>Feet.</i>		<i>Feet.</i>	<i>Feet.</i>
Municipal Pier.....	1,730	35	San Diego Lumber Co. wharf.....	200	28
Spreckels Bunker wharf.....	900	30	McCormick Lumber Co. wharf.....	800	30
East Santa Fe wharf.....	1,200	30	Benson Lumber Co. wharf.....	400	22
West Santa Fe wharf.....	600	30	Standard Oil Co. wharf.....	150	20
Pacific Coast Steamship Co. wharf.	858	30			

The bulk freight storage facilities are as follows:

	Square feet.
Municipal pier warehouse.....	52,500
East Santa Fe wharf warehouse.....	25,000
West Santa Fe wharf warehouse.....	10,000
Spreckels's bunker wharf warehouse.....	7,250
Pacific Coast wharf warehouse No. 1.....	3,000
Pacific Coast wharf warehouse No. 2.....	1,625
Pacific Coast terminal warehouse.....	17,500
Pioneer Truck Co. storage warehouse, 300 Fourth Street, rail connections with Santa Fe Railway, San Diego & Arizona Railway, and Pacific Coast wharf..	60,000
Pioneer Truck Co. storage warehouse, Sixth and Market Streets (no rail connection).....	50,000
There are a number of privately owned storehouses in vicinity of railroads and wharves that could be used in case of emergency, adding to the above easily.	100,000

3. NAMES OF RAILROAD LINES SERVING PORT.

Atchison, Topeka & Santa Fe Railway.

San Diego & Arizona Railway, now under construction; will be in operation in October, 1919, and will connect with the Southern Pacific Railway at Yuma, Ariz.

4. DRY DOCKING FACILITIES.

There are no dry docking facilities for boats over 150 feet long.

United States Navy is erecting marine railway to handle Government vessels.

5. ANCHORAGE AREA AVAILABLE WITHIN THE HARBOR.

Five square miles of anchorage area is available with 40 foot depth of water.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Unlimited supply at piers. Good quality for drinking and boiler purposes.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Total available now, 17,000 kilowatts (San Diego Consolidated Gas & Electric Co.). Available above present demands, 7,000 kilowatts obtained over transmission upon reasonable notice. Local capacity of steam plant of San Diego Consolidated Gas & Electric Co., 12,000 kilowatts. Excess on system, 5,000 kilowatts, which can be increased by adding a frequency changer. Character of emergency, 3-phase, 60-cycle alternating current at 220, 440, 2,200, or 11,000 volts, depending upon customers' requirements.

8. COALING FACILITIES.

Spreckels Bros. Commercial Co.: Storage capacity, 15,000 tons. Bunkering capacity, 100 tons per hour, using three steam hoists. No coal in stock at this date (Mar. 20, 1919); 8 to 10 days' notice required for supply to arrive from Utah.

9. FUEL-OIL FACILITIES.

Union Oil Co.:	Barrels.
Total storage capacity.....	58,000
Total bunkering capacity, per hour.....	500
Standard Oil Co.:	
Total storage capacity.....	42,000
Total bunkering capacity, per hour.....	500

10. CRANE AND DERRICK FACILITIES.

Municipal wharf:	Tons capacity-
Brown hoist.....	15
Floating crane.....	15
Russ Lumber & Mill Co.: Floating crane.....	10
Benson Lumber & Mill Co.: Floating crane.....	10
McCormick Lumber Co.: Brown hoist.....	15

11. STEAMSHIP LINES AT PRESENT USING PORT REGULARLY.

Pacific Steamship Co., McCormick Steamship Co., Standard Oil Steamship Co., Union Oil Steamship Co., Vancouver & San Diego Navigation Co., San Diego & West Coast Trading Co. Lumber steamers of different companies.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

There are no public grain elevators. One privately owned, 150,000 bushels capacity, Globe Grain & Milling Co.

13. VESSEL CLEARANCES.

Figures are not available showing clearances during the year 1914.

During the calendar year 1918 there cleared from San Diego a total of 475 vessels, with an aggregate net tonnage of 518,247 tons, but the report does not divide this as between foreign and coastwise movements.

14. REMARKS.

By an act of the State legislature, May, 1911, the city of San Diego was granted absolute control of its water front and tidelands adjacent, with a reservation that the city expend, within three years of the above date, \$1,000,000 in improvements. The expenditure has been made.

The administration of port affairs is vested in a city manager. Under him is a city engineer, who has charge of the construction of municipal terminals and is assisted by a harbor engineer, a hydraulic engineer, and a chief inspector of harbor work. The regulations relative to the movement, mooring, and anchorage in the harbor are enforced by a harbor master.

PORT AND TERMINAL FACILITIES, SAN FRANCISCO, CAL.**1. CONTROLLING DEPTH OF WATER TO THE SEA.**

Over the bar, 33 feet; south channel, 35 feet; north channel, 54 feet, all at mean lower low tide. The tidal range on the entrance bar, mean 4 feet, maximum 8 feet. Tidal range within the harbor same as on entrance bar.

2. BERTHING CAPACITY IN LINEAR FEET.

Total of 78,704 linear feet. The State Belt Railroad, which encircles the active water front, connects with all railroads or with car-ferry slips, which are accessible to all railroads.

3. NAMES OF RAILROAD LINES SERVING THE PORT.

Southern Pacific, Atchison, Topeka & Santa Fe, Western Pacific, Northwestern Pacific. Practically all piers are equipped with tracks permitting of direct interchange between ship and car.

4. DRY DOCKING FACILITIES.

One floating dry dock, 6,500 tons lifting capacity.

One floating dry dock, 2,000 tons lifting capacity.

One floating dry dock, 2,500 tons lifting capacity.

One marine railway, 3,500 tons lifting capacity.

Three marine railways, 4,000 tons lifting capacity each.

One graving dock, 750 feet long, 30 feet depth over the sill.

One graving dock, 618 feet long, 28 feet depth over the sill.

One graving dock, 730 feet long, 29 feet depth over the sill.

There is also recently completed one marine railway, lifting capacity of 4,000 tons; one marine railway, 2,500 tons lifting capacity, to be completed March, 1919.

5. ANCHORAGE AREA AVAILABLE WITHIN THE HARBOR.

Depth.	Nautical square miles.		
	North of Golden Gate.	South of Golden Gate.	Total.
30 feet.....	11.0	11.4	22.4
35 feet.....	8.8	9.1	17.9
40 feet.....	5.3	6.8	12.1

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Spring Valley Water Co. can furnish any quantity which may be required by ships. Stored water from direct run-off of drainage areas, and well water from gravel beds, is available. Piers are piped and ship obtains fresh water while at berth.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Both direct and alternating current of any required voltage is furnished by the Pacific Gas & Electric Co. and Great Western Power Co. Direct, 220 or 110 volts; alternating, 220 volts, 3-wire, 2 or 3 phase.

8. COALING FACILITIES.

Rolph Navigation & Coal Co.: Bunker, pier 15; 7,000 tons storage capacity. Capacity into bunkers, 3 hoists each, 40 tons per hour. Capacity coaling ships, 50 tons per hour. Coal barges, 3, total capacity 5,000 tons; capacity for bunkering ships, 35 tons per hour per barge. Two barges can coal a ship in the stream, one on each side.

King Coal Co.: Bunkers in Oakland, between 75,000 and 100,000 tons storage capacity. Ships bunkered in stream or at San Francisco piers. Ten coal barges, with a total capacity of 7,500 tons. Capacity for bunkering ships, 35 tons per hour per barge. Two barges can work on one ship in the stream.

9. FUEL OIL FACILITIES.

Associated Oil Co., Union Oil Co., Shell Oil Co., and Standard Oil Co., all have large storage capacities and are equipped with oil barges so that vessels can be bunkered at the docks or in the stream at the rate of 1,000 barrels per hour. The total storage capacity is 1,642,390 barrels.

10. CRANE AND DERRICK FACILITIES.

At China Basin, boom derrick, 90-foot boom, capacity 20 tons; boom rigged at 60 feet, capacity 30 tons.

At Union Iron Works, shear-leg derrick, capacity 100 tons.

Floating boom derricks: 20-ton capacity, 105-foot boom; three 20-ton capacity, 100-foot boom; two 50-ton capacity, 100-foot boom.

All derricks are operated by steam.

11. STEAMSHIP LINES AT PRESENT SERVING THE PORT REGULARLY.

Foreign trade:

J. D. Spreckels & Co.—

Oceanic Steamship Co.

Java Pacific Steamship Co.

J. D. Spreckels & Co.

China Mail Steamship Co.

Mitsui & Co. (Ltd.).

Hind Rolph & Co.

National Steamship Co., Mexico.

Standard Oil Co.

Balfour Guthrie Co.

W. R. Grace & Co.

Matson Navigation Co.

Toyo Kisen Kaisha Steamship Co.

Pacific Mail Steamship Co.

Luckenback Steamship Co.

Coastwise:

C. R. McCormick Steamship Co.
 Union Steamship Co.
 C. H. Higgins.
 Pacific Steamship Co.
 Hobbs Wall.
 San Francisco, Portland Steamship Co.

Bay and river:

Parr McCormick Steamship Co.
 Farmers Transportation Co.
 E. V. Rideout & Co., miscellaneous.
 Berkeley Transportation Co.
 Belt Line Transfer Co..
 Sacramento Transfer Co.
 Sonoma Express.
 California Transportation Co., bay and river.
 California Navigation & Improvement Co.
 Petaluma & Santa Rose Railway Co.

Lumber:

Pope & Talbot.
 Loop Lumber Co.
 Union Lumber Co.
 Hooper Lumber Co.

Service not indicated:

Gulf Mail Steamship Co.
 Independent Steamship Co.
 Rolph Navigation & Coal Co.
 Sudden & Christenson.
 Chas. Nelson Co.
 Atkinson, Kroll & Co.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

No grain elevators.

13. VESSEL CLEARANCES.

	Total number of vessels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Fiscal year ending June 30, 1914.....	786	5,290	2,363,982	4,873,018
Fiscal year ending June 30, 1918.....	1,037	3,885	2,447,025	2,882,863

14. REMARKS.

There are 39 piers, as well as bulkhead wharves. The area of the piers is 4,591,903 square feet. The bulkhead wharf area for cargo is 1,120,000 square feet. All but two piers are covered, averaging from 600 to 1,100 feet in length. Actual car capacity of pier tracks, 1,000. No freight-handling machinery; all handling done with hand trucks or electric tractors and trailers. Are preparing to install freight-handling devices of various kinds as soon as same can be

obtained. All harbor facilities are owned by the State of California and administered by the board of State harbor commissioners.

It is remarked that by rigid enforcement of regulations for proper movement of cargo, probably 25 to 30 per cent more cargo can be handled annually. The following regulations will become effective April 1, 1919:

Consignees of cargo will be required to remove their merchandise at once from the piers, and in order to enforce this the following demurrage charges will be made:

Coastwise cargo remaining on the piers 5 days, and offshore and foreign cargo remaining 10 days after complete discharge of the vessel delivering the same, shall be assessed a charge of 25 cents per ton for the first 5 days thereafter or portion thereof and 50 cents per ton for each succeeding period of 5 days or portion thereof, and furthermore, that the chief wharfinger may at any time following the discharge of the vessel place such cargo in warehouse at the risk and expense of consignee of the cargo.

Vessels will be required to discharge or load a minimum of 500 tons daily, and demurrage is to be charged in the form of one-half the present rate of dockage for any excess time required at the dock. Dockage, which will be also known as "demurrage," will be charged if a vessel lies idle at the berth or undergoes repairs at the berth.

The following time will be allowed for assembling cargo for foreign and offshore vessels:

Vessels from 1,000 to 2,000 tons, 4 days.

Vessels from 2,000 to 4,000 tons, 6 days.

Vessels from 4,000 to 6,000 tons, 8 days.

Vessels from 6,000 to 10,000 tons, 10 days.

If, however, the cargo has been assembled in accordance with the above, and the vessel does not arrive and take its berth, demurrage charges as above for removing cargo from the dock shall apply to the cargo, and the vessel will be charged one-half the rate of dockage as provided above from the time it was supposed to have taken the berth.

PORT AND TERMINAL FACILITIES, SAVANNAH, GA.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Twenty-four feet at mean low water is the controlling depth of water to the sea. Two soft shoals being removed will increase depth to 26 feet.

The normal tidal range on entrance bar is 6 feet 6 inches; spring tide 7 to 8 feet. Tidal range in the harbor is same as on entrance bar.

Distance from terminals to the open sea is 24 miles.

Existing project provides for a channel 30 feet deep at mean low water from the sea to quarantine station, a distance of $10\frac{1}{2}$ miles; thence 26 feet mean low water to the Seaboard Air Line bridge, a distance of 16 miles; and thence 21 feet mean low water to foot of Kings Island, a distance of $1\frac{1}{2}$ miles.

2. BERTHING CAPACITY IN LINEAR FEET.

The total berthing capacity is 33,153 linear feet. The terminal companies maintain normal depth at berth for ships of 26 feet at mean low water.

	Atlantic Coast Line R. R.	Central of Georgia Ry.	Seaboard Air Line Ry.	Other compa- nies and individ- uals. ¹	Total.
Frontage on Savannah River.....miles..	1	1	0.4	1	3.4
Number of ships.....		4	3		7
Docking space.....linear feet..	5,280	11,340	11,252	5,280	33,153
Car-standing space at warehouses and sheds.....cars..	900	1,700	1,100	350	4,050
Car-storage space in Savannah yards.....do....	2,900	2,000	1,900	300	7,100

¹ Part of this frontage is not available for general shipping, as same is used by companies for their own business.

3. NAMES OF RAILROAD LINES SERVING PORT.

Seaboard Air Line Railway, Central of Georgia Railway, Atlantic Coast Line Railroad, Southern Railway, Savannah & Atlanta Railroad, Savannah & Statesboro Railroad, Midland Railway. The railroads own and control practically all improved terminal facilities at this port and make delivery direct to ship.

4. DRY DOCKING FACILITIES.

Two small marine railways in operation. An 8,000-ton floating dry dock and a 2,500-ton marine railway are now in course of construction and are expected to be completed at an early date.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

Location.	Width of channel (feet).	Miles below city.	Area in square feet, exclusive of projected channel width.		
			22 feet mean low water.	24 feet, mean low water.	26 feet, mean low water.
Five fathom hole.....	500	3½	900,000	350,000	300,000
Venus Point Pocket.....	600	7½	900,000	300,000	None.
Quarantine.....	500	12-15	2,100,000	1,000,000	510,000
Tybee roads.....	500	19-22	19,200,000	6,350,000	2,600,000

MOORING DOLPHINS.

	Linear feet.	Depth in feet at mean low water.
Upper Dolphin, 5 miles below city.....	1,300	27-36
Lower Dolphin, 9 miles below city.....	1,800	25-35

With the numerous wharves and terminal facilities at the port of Savannah vessels seldom have occasion to anchor, as they are brought up to the city and made fast alongside the dock. A nominal charge of \$1.50 is made for vessels lying at the docks for indefinite time, while there is no wharfage charge made for vessels lying at docks when loading or discharging cargoes.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Fresh water for boiler and drinking purposes supplied to vessels by towboats. These boats take the water into their tanks for delivery to the vessels from the city supply. The towboat company has a standard charge of \$1 per ton for boiler water and 1 cent per gallon for drinking water, delivered on board vessel. The city obtains its water supply from artesian wells. The water in these wells averages from 500 to 1,400 feet deep. The water is potable, clear, and highly desirable for domestic and boiler use.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

The Savannah Electric Co., owned and controlled by Stone & Webster, of Boston, Mass., has available electric current for sale. The current is of different characteristics in different sections of the city. One section of the city has direct current, 3-wire system, 110 and 220 volts, used for both light and small power. Lighting service for balance of city is alternating current, 110 volts, 60 cycles, single phase. Power service for sections within city limits is alternating current, 2-phase, 60-cycle, 2,300 or 220 volts. Just outside city limits service is alternating current, 3-phase, 60-cycle, 13,200 or 2,300 volts.

The Savannah Lighting Co. is a local company; has available for immediate sale 5,000-kilowatt hours. The characteristics are alternating current, 2-phase, 60-cycle, 220 volts.

8. COALING FACILITIES.

The coaling companies in the port supply bunker coal, one with a shuttle-conveying system loading coal into steamers' bunkers or on lighters or barges, with a capacity of 8,500 tons every 24 hours; the storage capacity on yards is 20,000 tons. Another company delivers by derrick, with a capacity of 1,000 tons every 24 hours; storage capacity of 10,000 tons.

9. FUEL OIL FACILITIES.

At present there are no storage tanks in use for fuel oil purposes. The Texas Co. is constructing and expects to have ready at an early date two tanks of 64,000 barrels capacity each. Tanks at the port which could be utilized for fuel oil are two creosote tanks, capacity 500,000 gallons each, on the terminal of the Central of Georgia Railway, with pipe to water front. One tank, 100,000 gallons capacity, at Tybee Roads, built for the storage of fuel oil, 1,500 feet from river front without pipe line; two tanks used for turpentine, with pipe-line connection to river front, on Seaboard Air Line terminals; four

turpentine tanks on Atlantic Coast Line terminals, piped to water front; these turpentine tanks have a capacity of approximately 260,000 gallons each.

The Standard Oil Co. maintains a large distributing depot about 1½ miles back from the river front, with pipe line leading thereto.

10. CRANE AND DERRICK FACILITIES.

Smith & Kelley Co., stevedores, have two derrick lighters utilized principally in handling coal; capacity 2 tons.

John Rourke & Sons, foundrymen and machinists, have a derrick lighter used in repairing wrecking work, 60 tons capacity.

Ocean Steamship Co. is equipped to handle freight between cars or warehouses and vessels by five 10-ton traveling cranes operated on I-beam trolley. It is customary at this port to use the ship's derricks and gear altogether in loading and discharging cargo. By lashing these derricks together and using both winches aboard a steamer single pieces weighing up to 6 tons have been lifted.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

Ocean Steamship Co., operating steamers between Savannah and New York-Boston.

Merchants & Miners Transportation Co., operating steamers coastwise between Savannah and Baltimore, and Philadelphia and Baltimore.

Donaldson Lines (Strachan Shipping Co., agents), operating British steamers between Savannah and ports in the United Kingdom.

Leyland Line (Strachan Shipping Co., agents), operating British steamers between Savannah and ports in the United Kingdom.

Harrison Lines (A. F. Churchill, agent), operating steamers between Savannah and ports in the United Kingdom.

Ente Trasporto Cotroni (Strachan Shipping Co., agents), operating steamers between Savannah and ports in Italy. Besides the above lines, Strachan Shipping Co. and A. F. Churchill load occasional steamers for ports in France and Portugal.

South Atlantic Maritime Corporation, steamship line, Savannah to West Indies, Central and South America; service being arranged.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

No elevator.

13. VESSEL CLEARANCES.

Information not furnished.

14. REMARKS.

Savannah has the largest business of any South Atlantic port. It is principally export and coastwise, the imports being comparatively light. The exports comprise about one-fifth of the total, and the principal items are cotton, cottonseed products, lumber, and naval

stores. The principal terminals are privately owned. The city owns several miles of undeveloped water front. The port is under control of the municipality; administered by a harbor committee of three aldermen appointed by the mayor.

PORT AND TERMINAL FACILITIES, SEATTLE, WASH.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Seattle is located on Elliott Bay, an arm of Puget Sound, about 138 miles from Cape Flattery.

There is no entrance bar to Puget Sound waters.

The depth of the bay is excessive, and precludes anchorage except at few places close to shore. Buoys are provided by the city for the mooring of vessels when not engaged in loading or discharging cargo. Average depth of the main channel is 40 fathoms. The mean range of rise and fall of tide at entrance of Puget Sound is 5.7 feet neap tide and 7.1 feet spring tide.

The tidal range within Seattle Harbor is 7.6 feet neap and 9.1 feet spring tide.

2. BERTHING CAPACITY IN LINEAR FEET.

Piers along the city's central water-front district have total berthing space of 57,332 linear feet. They can accommodate simultaneously one hundred 400-foot vessels.

Spur track capacity of wharves, 1,731 cars.

Pier or company.	Class.	Size of wharf or plant.		Depth of water at low tide.	Car capacity.	Linear feet berthing space.
		Dimensions.	Square feet area.			
Great Northern No. 1.....	A.	170 by 1,700...	289,000	38	230	1,600
Great Northern No. 2.....	A.	120 by 2,040...	244,000	28	25	700
Pier 18.....	B.	60 by 170.....	10,200	30	-----	75
Union Oil Co.....	B.	.....	25,200	35	-----	1,035
Pier 14.....	A.	170 by 535.....	91,000	30	19	1,060
American Can Co.....	B.	60 by 300.....	18,000	30	-----	400
Booth Fisheries Co.....	B.	90 by 150.....	13,500	30	4	512
Pier 12.....	A.	140 by 410.....	61,600	30	12	1,200
Pier 11-B., U. S. Quartermaster Corps.....	.....	135 by 390.....	52,600	30	10	550
Pier 11-A.....	B.	145 by 200.....	29,000	30	12	550
Pier 10.....	A.	100 by 330.....	33,000	40	5	983
Pier 9.....	A.	90 by 330.....	29,700	40	15	983
Pier 8.....	B.	100 by 430.....	43,000	40	4	1,226
Pier 7.....	A.	110 by 400.....	44,000	30	10	964
Pier 6½.....	A.	70 by 260.....	18,200	30	-----	330
Pier 6.....	A.	150 by 340.....	51,000	30	18	800
Pier 5.....	A.	130 by 350.....	45,500	40	16	700
Pier 4.....	A.	110 by 320.....	35,200	40	10	550
Pier 3.....	A.	160 by 320.....	51,300	40	4	770
G. T. P. wharf.....	A.	115 by 590.....	67,800	30	6	1,400
Colman dock.....	A.	115 by 680.....	78,200	40	5	1,400
Pier 2.....	A.	135 by 760.....	102,500	40	16	1,200
Pier 1.....	A.	135 by 830.....	112,000	30	16	1,400
Pier A.....	A.	90 by 560.....	50,400	30	15	886
Pier B.....	A.	125 by 570.....	71,200	30	15	924
Pier C.....	A.	90 by 560.....	50,400	30	10	805
Pier D.....	A.	175 by 865.....	151,200	30	60	1,300
O.-W. R. & N. wharf.....	A.	210 by 740.....	155,500	30	60	1,300
Pacific Coal Co.....	B.	570 by 1,130.....	644,000	30	116	1,185
Seattle Construction & Dry Dock Co.....	C.	900 by 1,350.....	1,215,000	24	45	2,494
Skinner & Eddy Corporation.....	C.	.....	1,320,000	30	50	2,500
Albers Bros.....	B.	270 by 450.....	121,500	33	60	550
Hammond Mill Co.....	B.	.....	67,200	36	30	600
Standard Oil Co.....	B.	.....	319,000	30	-----	750

Pier or company.	Class.	Size of wharf or plant.		Depth of water at low tide.	Car capacity.	Linear feet berthing space.
		Dimensions.	Square feet area.			
Nilson & Kelez.....	C.	200 by 800.....	160,000	30	6	500
San Juan Fish Co.....	B.	110 by 430.....	47,300	28	4	350
Commercial Boiler Works.....	B.	110 by 450.....	49,500	30	.....	790
Chicago, Milwaukee & St. Paul wharf..	A.	150 by 790.....	118,500	30	30	550
Pacific Construction & Engineering Co.	B.	120 by 670.....	80,400	30	.....	500
J. F. Duthie Shipbuilding Co.....	C.	.....	.....	30	.....	1,500
East Waterway dock.....	A.	125 by 600.....	75,000	30	40	1,200
Puget Sound B. & D. Co.....	C.	.....	.....	30	.....	1,100
Chas. H. Lilly Co.....	B.	125 by 167.....	20,875	25	23	500
Fisher Flouring Mills.....	B.	.....	.....	30	.....	400
Drummond Lighterage Co.....	B.	125 by 169.....	21,125	.....	.....	400
Colman Creosote Co.....	B.	.....	.....	30	.....	300
Schwager-Nettleton.....	B.	.....	.....	28	.....	870
Wilson Shipbuilding Co.....	C.	.....	.....	30	.....	1,200
Ames Shipbuilding Co.....	C.	.....	.....	30	.....	1,200
Wellington Coal Co.....	B.	70 by 260.....	18,200	45	.....	330
West Seattle Elevator.....	B.	.....	.....	41	.....	460
Great Northern Elevator, Smiths Cove	A.	.....	.....	28	.....	700
Novelty Mill Co.....	B.	.....	.....	19	.....	100
Seattle Lumber Co.....	B.	.....	.....	30	.....	820
Pacific Net & Twine Co.....	B.	100 by 430.....	43,000	40	4	1,226

Classification: A—Commercial wharves; B—Industrial wharves; C—Shipbuilding yards.

MUNICIPALLY OWNED.

	Dimensions (width and length).	Berthing space in linear feet.	Depth of water at low tide.	Car capacity.
Smiths Cove.....	310 by 2,580..	3,698	35	527
Bell Street.....	1,200.....	1,226	25	72
Stacy Street and Lander Street.....	100 by 814..	2,580	35	119
Hanford Street.....	100 by 1,500..	1,480	35	58
Spokane Street.....	90 by 900....	1,374	30	117
Salmon Bay.....	300 by 500...	987	26	31

3. NAMES OF THE RAILROAD LINES SERVING PORT.

Chicago, Milwaukee & St. Paul Railway.
 Great Northern Railway Co.
 Northern Pacific Railway.
 Union Pacific System (Oregon-Washington Railway & Navigation Co.).
 Pacific Coast Railroad.

4. DRY DOCKING FACILITIES.

Todd Dry Dock Corporation, Harbor Island, Seattle: No. 2 type, floating; capacity, 3,000 tons; length, 200 feet; inside width, 55 feet; draft over keel blocks, 19 feet. No. 3 type, floating; capacity, 12,000 tons; length, 468 feet; inside width, 85 feet; draft over keel blocks, 31 feet. No. 4 type, floating sectional dock; capacity, 12,000 tons; length, 426 feet; inside width, 98 feet between towers; draft over keel blocks, 31 feet.

Elliott Bay Dry Dock Co., foot of King Street, Type, floating; capacity, 350 tons; length, 100 feet; inside width, 33 feet; draft over keel blocks, 14½ feet.

stores. The principal terminals are privately owned. The city owns several miles of undeveloped water front. The port is under control of the municipality; administered by a harbor committee of three aldermen appointed by the mayor.

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Elliott Bay Dry Dock Co., foot of King Street, Type, floating; capacity, 350 tons; length, 100 feet; inside width, 33 feet; draft over keel blocks, 14½ feet.

Heffernan Dry Dock Co., 1650 Harbor Avenue. Type, floating; capacity, 3,500 tons; length, 340 feet; beam, 80 feet over all and 56 feet inside of towers; draft over keel blocks, 20 feet.

Skinner & Eddy Corporation, 24 Connecticut Avenue, west: Type, floating; capacity, 15,000 tons; length, 469 feet; inside width, 90½ feet; draft over keel blocks, 24 feet.

Puget Sound Navy Yard, Bremerton, Wash.: No. 1, docking length, 618.8 feet; docking width, 65.6 feet; docking depth, 28.1 feet. No. 2, docking length, 801.8 feet; docking width, 110 feet; docking depth, 35.6 feet.

Besides the above-enumerated dry docking facilities, there are 17 marine railways, with lifting capacities of from 75 to 500 tons, with 1 railway of 4,000-tons lifting capacity.

5. ANCHORAGE AREA AVAILABLE WITHIN THE HARBOR.

Seattle.	Square miles.	Depth of water, mean low tide. Fathoms.
1. Elliott Bay.....	2.13	4-20.
2. Salmon Bay.....	.67	7.
3. Lake Union.....	1.75	3-8 (no tide), fresh-water body.
4. Lake Washington (west side).....	7.25	3-10 (no tide), fresh-water body.
	11.80	

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Seattle owns its own water system, with pipe lines capable of bringing into the city 60,000,000 gallons per day. The source of the water is Cedar River, in the foothills of the Cascade Mountains.

Water is supplied to vessels by hose. Quality for boiler purposes as pure as water is ever obtained in natural state; free from minerals that corrode.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Seattle has two electric light and power plants.

The Puget Sound Traction, Light & Power Co. and subsidiary companies have two water and two steam plants, with a general capacity in horsepower of 166,593, generated as alternating, distributed both as alternating and direct current. Voltage 55,000, 13,000, 2,300 alternating current, 550, 220, 110 direct current, 3-phase, 60-cycle.

The Puget Sound Traction, Light & Power Co. owns three water-power plants and two steam auxiliary plants, with a combined capacity of 111,500 kilowatts.

The city of Seattle owns its own plant for lighting and industrial purposes.

8. COALING FACILITIES.

Firm name and location.	Storage capacity in tons.	Delivery capacity per hour.	Nature of storage.	Method of delivery.
Pacific Coast Coal Co., foot of Dearborn Street. ¹	5,000 on dock; auxiliary storage yard approximately $\frac{1}{2}$ mile available by railroad cars to dock, 30,000 tons.	600 tons, or 300 to each of 2 boats loading at one time.	Bunkers, 1,000; platform, 4,000; ground.	2 conveyors delivering into 2 gravity towers.
Pacific Coast Coal Co., West Seattle coal bunkers. ²	5,000 tons.....	300 tons.....	Bunkers.....	Elevator and gravity chute.
Occidental Fuel Co., Latona and Northlake Streets. ³	7,000.....	15 tons.....	Platform and bins.	Do.

¹ 4 boats any size can lie alongside loading towers at one time, 1 tower alternating 2 boats. Dock storage susceptible of development to 15,000 to 20,000 tons, and loading for 2 more boats at 120 tons an hour.

² 1 boat any size at one time.

³ Not available to seagoing boats. Depth of water, 10 to 11 feet. Located on fresh water. Use of Lake Washington Canal required.

9. FUEL OIL FACILITIES.

Total storage capacity, 597,000 barrels or 25,074,000 gallons.

Total bunkering capacity, 8,955 barrels or 377,800 gallons.

General Petroleum Co.: Location, foot of Charles Street, also Meadow Point; storage capacity, 70,000 barrels or 2,940,000 gallons; bunkering capacity, 4,095 barrels or 172,000 gallons; method of bunkering, delivery by barge from Charles Street and by hose at Meadow Point. Meadow Point can accommodate seagoing vessels.

Union Oil Co., of California: Location, between Bay and Broad Streets; storage capacity, 102,000 barrels or 4,284,000 gallons; bunkering capacity, 600 barrels or 25,200 gallons; method of bunkering, delivery made to seagoing vessels by hose.

Shell Co., of California: Location, Richmond Beach; storage capacity, 110,000 barrels or 4,620,000 gallons; bunkering capacity, 1,500 barrels or 63,000 gallons; method of bunkering, delivery made to seagoing vessels by hose.

Standard Oil Co.: Location, Railroad Avenue South and Whatcom; also Richmond Beach; storage capacity, 315,000 barrels or 13,230,000 gallons; bunkering capacity, 2,800 barrels or 117,600 gallons; method of bunkering, delivery made at both Seattle and Richmond Beach by hose to seagoing vessels.

10. CRANE AND DERRICK FACILITIES.

One 100-ton shear leg derrick, one 5-ton gantry crane, one 35-ton locomotive crane, one 15-ton locomotive crane, one 12-ton stiff leg derrick, one 3-ton stiff leg derrick, one 2-ton shear leg derrick, two 1-ton stiff leg derricks.

Four locomotive cranes, 5 to 15 tons capacity; floating derrick, 100,000 pounds lifting capacity; electric derrick, 30,000 pounds lifting capacity; two electric hoists, 18,000 and 36,000 pounds lifting capacity; stiff leg derrick, 40,000 pounds lifting capacity; two stiff leg derricks, 20,000 pounds lifting capacity; locomotive crane, 25,000 pounds lifting capacity.

11. STEAMSHIP LINES OPERATING OUT OF SEATTLE.

ORIENT.

Canadian-Trans-Pacific Steamship Co., Frank Waterhouse & Co., Nippon-Yusen-Kaisha, Osaka-Shosen-Kaisha, Mitsui & Co., A. M. Gillespie & Co.—Semimonthly service.

Pacific Steamship Co., Dollar Steamship Co., Trans-Oceanic Steamship Co., Overseas Shipping Co.—Irregular service.

H. F. Ostrander & Co., James Griffiths & Sons—Frequent service. Blue Funnel Line (China Mutual Steam Navigation Co. and Ocean Steamship Co.) Dodwell & Co., agents—28-day service.

Thorndyke & Trenholme, Suzuki & Co.—Monthly service.

Uchida & Co., Struthers & Dixon—Regular service.

Norton Lilly & Co., Mitsubishi & Co.—Contemplate service.

SIBERIA AND MANCHURIA.

Suzuki & Co.—Monthly service.

Frank Waterhouse & Co., H. F. Ostrander & Co., Mitsui & Co., Russian Volunteer Fleet, Trans-Oceanic Steamship Co., Overseas Shipping Co.—Irregular service.

EUROPE.

Royal Mail Steam Packet Co. (Frank Waterhouse & Co., agents)—Semimonthly service.

Blue Funnel Line (Dodwell & Co., agents), East Asiatic Co.—Monthly service.

Harrison Direct Line (Balfour-Guthrie Co., agents)—Sporadic service.

Johnson Line (W. R. Grace & Co.), Fred Olsen Line—Irregular service.

AUSTRALIA, NEW ZEALAND, HAWAIIAN, AND FIJI ISLANDS.

Canadian-Australian Steamship Line—Monthly service.

WEST COAST OF SOUTH AMERICA.

W. R. Grace & Co., Fawcner & Currie Co., J. Henry Smith, South American Pacific Lines—Irregular service.

COASTWISE SAILINGS.

Alaska Steamship Co.: Service to Southeastern Alaska, Southwestern Alaska—Every six days. Alaska Peninsula—Monthly during nine months of year. Bering Sea points—Twenty-eight days during nine months of year.

Pacific Steamship Co. (Admiral Line), operating between Seattle, California, Alaska, and British Columbia: Service to California—Triweekly. Southeastern Alaska—Weekly. Southwestern Alaska—Triweekly. Bering Sea points—Monthly, during nine months of year. British Columbia—Trimonthly.

Grand Trunk Steamship Co., operating between Seattle, British Columbia, and Alaska: Service to British Columbia and Alaska—Weekly.

Humboldt Steamship Co., operating between Seattle and southeastern Alaska: Service to southeastern Alaska—Every 10 days.

Border Line Transportation Co., operating between Seattle, local points, British Columbia, and Alaska: Service to local points, British Columbia—Semiweekly. Southeastern Alaska—Weekly.

Coastwise Steamship & Barge Co. (James Griffith & Sons, agents): Service to British Columbia and Alaska—Frequently.

Chas. Nelson Co. (W. C. Dawson Co., agents): Service to British Columbia and California—Weekly service.

Parr-McCormick Steamship Co.: Service between Seattle, Puget Sound, British Columbia, Columbia River, and California—Irrregular service.

Canadian Pacific Steamship Co., operating between Seattle and British Columbia: Service to British Columbia—Daily service. Southeastern Alaska—Ten-day service.

Seattle Steamship Co., operating between Seattle and Alaska—Fifteen-day service.

Chas. R. McCormick Steamship Co., operating between Seattle, Grays Harbor, Columbia River, and California—Weekly service.

Albers Bros. Milling Co., operating between Seattle and San Francisco—Weekly service.

Northern Navigation Co.: Service to Alaska—Irrregular.

Kuskokwim Transportation Co.: Service to Alaska—Irrregular.

A. F. Thane & Co.; Service to Alaska—Irrregular.

LOCAL.

Plying between Seattle and local Puget Sound and Lake Washington points:

Anderson Steamship Co., Eagle Harbor Route, Independent Steamship Line, Island Belt Transportation Co., Island Transportation Co., King County Commission, Kingston Transportation Co., Kitsap County Transportation Co., Liberty Bay Transportation Co., McDowell Steamship Co., Merchants Transportation Co., Navy Yard Route, Port of Seattle Commission, Port Washington Route, Port Angeles Transportation Co., Puget Sound Naval Station Route, Puget Sound Navigation Co., Skagit River Navigation Co., Star Steamship Co., Tacoma & Roche Harbor Line Co., Washington Route, and West Pass Transportation Co.

Barges and towboats operating out of Seattle:

Alaska Barge Co., Carry-Davis Towing Co., Chesley Tow Boat Co., Drummond Lighterage Co., Elliott Bay Tug & Barge Co., Lillico Launch Co., Pacific Barge Co., Pacific Tow Boat Co., Puget Sound Tug Boat Co., Washington Tug & Barge Co., and Washington Stevedore Co.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

	Bushels.
Hanford Street Grain Elevators.....	1, 000, 000
Spokane Street Grain Elevators.....	511, 700
Hammond Milling Co.....	350, 000
McDowell Dock & Warehouse.....	300, 000
Booth Fisheries Co.....	66, 667
Great Northern Elevator.....	291, 666
Union Pacific Elevator.....	666, 667
Lilly's Dock.....	175, 000
West Seattle Elevators.....	600, 000
Fisher Flouring Mills.....	1, 000, 000
Galbraith, Bacon & Co.....	66, 667
W. F. Jahn & Co.....	66, 667
Novelty Mills Co.....	40, 000
Total.....	5, 135, 033

13. VESSEL CLEARANCES.

	Total number of ves- sels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Fiscal year ending Dec. 31, 1914.....	3, 819	(¹)	7, 658, 462	(¹)
Fiscal year ending Dec. 31, 1918.....	6, 292	47, 252	8, 201, 099	13, 217, 148

¹ Included with foreign; separate records not kept.

14. REMARKS.

The railroad and steamship owned piers are under the jurisdiction of the public service commission of Washington. The affairs of the municipally owned piers are administered by a separate and independent corporation, created by the port district act of the State legislature, approved March 14, 1911. The governing body of the port district is known as the port of Seattle commission. It consists of three members elected by popular vote for terms of three years, arranged so that one commissioner retires every year.

The port warden is appointed by the mayor, and acts independently of the port commission. His duty is to enforce harbor rules and regulations passed by the city council, and to collect mooring, docking, and wharfage charges, and to collect and compile statistics of the movement and tonnage of vessels.

Funds for harbor construction and improvement are provided by bonds voted by the people of the port district. The port is noted for its excellent municipal terminal and warehouse facilities.

PORT AND TERMINAL FACILITIES, TACOMA, WASH.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Tacoma is located on an arm of Puget Sound, about 30 miles south of Seattle, and 168 miles from Cape Flattery.

There is no entrance bar to Puget Sound waters.

The average depth of the main channel is 40 fathoms.

The mean range of tide within the harbor is 8 feet.

2. BERTHING CAPACITY IN LINEAR FEET.

	Warehouses on piers.	Depth in feet at mean low water.	Storage capacity in tons.
Municipal dock.....	500 by 170.....	27	5,000
Fifteenth Street dock.....	300 by 100.....	15	.....
Northern Pacific Railroad & Oriental dock.....	800 by 120.....	30	20,000
Northern Pacific ocean dock.....	600 by 80.....	30	12,000
Northern Pacific local dock.....	400 by 50.....	30	3,000
Chicago, Milwaukee & St. Paul Railway:			
Grain Elevator Dock.....	500 by 175.....	35	¹ 1,000,000
Oriental Dock.....	2,000 by 216.....	35	25,000
Union Pacific Dock.....	200 by 30 ²	27	500
Commercial Dock:			
No. 1.....	600 by 125.....	30	12,000
No. 2.....	400 by 150.....	30-36	12,000
Baker Dock & Ballour Guthrie.....	1,200 by 128.....	30	30,000
London Dock.....	400 by 148.....	27	10,000
Crowe & Co.....	200 by 100.....	18	4,000
Pacific Fruit & Produce.....	300 by 120.....	16	3,000
John B. Stevens.....	500 by 120.....	33	15,000
P. J. Fransioli & Co.....	350 by 120.....	30	10,000
Pacific Coast Gypsum Co.....	130 by 134.....	25	6,000
Northwestern dock.....	360 by 148.....	27	9,500
Albers Bros.....	140 by 125.....	} 20	6,000
	125 by 300.....		
Puget Sound Flour Mills.....	150 by 800.....		16,000
Sperry Flour Mills.....	800 by 110.....	30	55,000
	80 by 105.....	}	21,000
Tacoma Grain Co.....	87 by 78.....		
	100 by 50.....		
Tacoma Smelters Dock.....	1,050 by 50.....	40	.....
Donaher Lumber Co.....	100 by 500.....	25	² 4
St. Paul & Tacoma Lumber Co.....	Open.....	25-28	² 4
Puget Sound Lumber Co.....	50 by 250.....	25	² 2
De fiance Lumber Co.....	100 by 250.....	25	² 5

¹ Bushels.² Million feet b. m.

Wharves assigned to—	Number.	Linear feet.
Overseas traffic.....	18	10,410
Coastwise traffic.....	12	2,775
Local or harbor traffic.....	8	1,146
Railroad car floats.....	2	200
Total.....	40	14,531

3. NAMES OF THE RAILROAD LINES SERVING PORT.

Chicago, Milwaukee & St. Paul Railway.
Great Northern Railway.
Northern Pacific Railroad.
Union Pacific System (Oregon-Washington Railway & Navigation Co.).

4. DRY DOCKING FACILITIES.

There are at present no dry docks in the port of Tacoma.

5. ANCHORAGE AVAILABLE WITHIN THE HARBOR.

Anchorage is available for a great number of ships convenient to Tacoma Harbor.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

The city of Tacoma is supplied with water from Green River by gravity system; capacity, 24,000,000 gallons per day.

The water is of excellent quality for domestic and boiler purposes. Distribution system reaches all parts of the Tacoma water front.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Both alternating and direct current is furnished in the city and to the water front by the city of Tacoma and by the Puget Sound Traction, Light & Power Co. in ample quantity.

8. COALING FACILITIES.

Northern Pacific Railway: Bunker, 410 feet long, 60 feet wide. Opening, 14 pockets, four of 600 tons each, nine of 1,300 tons each and one of 2,000 tons capacity; stands 265 feet back from the face of the dock on which is built a delivery tower.

Total pocket storage capacity, 16,100 tons. Coal delivered to the tower through underground tunnel by conveyor buckets. Delivery chutes can be elevated to suit the height of the steamer. Delivery capacity 600 tons per hour. Depth of water alongside, 33 feet.

Pacific Coast Coal Co.: Total storage capacity, 7,680 tons; open capacity, 7,000 tons; pocket capacity, 680 tons; loading facilities, 50 tons per hour; wharf dimensions, 115 by 40 feet; depth of water along side, 16 feet; railroad serving, Northern Pacific Railroad.

9. FUEL OIL FACILITIES.

Standard Oil Co.: Total storage capacity, barrels of 42 gallons, 34,526. Total bunkering capacity, barrels per hour, 550.

Storage facilities: Above ground—Number of tanks, 2; exact location, tide flats, Tacoma, Wash. Capacity of each: Tank No. 1, 33,821 barrels; tank No. 18, 705 barrels. Type of construction, steel; intake pipe lines—one 8-inch, 2,575 feet long. Underground, none.

Fuel oil deliveries are made over wharf located about 2,000 feet from plant. Wharf is located on "city waterway," tide flats, between street-car bridge and railroad bridge. Depth of water alongside: Low 17 feet, mean 24 feet 6 inches, high 31 feet. Discharge pipe lines, number and size same as intake. Discharge capacity, in barrels per hour, 550 barrels.

Floating equipment: None.

Loading heads or dolphins: None.

Supply. source of: Standard Oil Co.'s regional station, Point Wells (Richmond Beach), Wash. How transported: Barge.

Grades handled: Fuel oil, not less than 14° Baumé. Maximum and average quantities kept in stock. Storage is, as a rule, kept as full as possible.

10. CRANE AND DERRICK FACILITIES.

"The crane and derrick facilities at Tacoma are limited, there being one at the Todd Shipyards; one at the Foundation Shipyards; and a small crane on the city dock."

11. STEAMSHIP LINES AT PRESENT USING PORT REGULARLY.

Pacific Steamship Co., South American Steamship Co., Border Line Steamship Co., Charles Nelson Line, W. R. Grace & Co. Line, Alaska Steamship Line, Osaka Shosen Kaisha, Nippon Yusen Kaisha, Blue Funnel Line, Garland Line, Harrison Line, and McCormick Line. Irregular: Ocean Transport Co., Dollar Line, Mitsui Line, and Grand Trunk Line.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

	Bushels.
Tacoma Grain Co.....	700,000
Sperry Elevator Co.....	1,250,000
Puget Sound Flouring Mills Co.....	200,000
Milwaukee Elevator Co.....	110,000
Balfour Elevator Co. and dock.....	660,000
Northwestern Dock.....	300,000
Total capacity, in bushels.....	3,220,000

13. VESSEL CLEARANCES.

(No figures available for 1914.)

Fiscal year ending June 30, 1918:

Total number of vessels cleared—	
Foreign.....	703
Coastwise.....	1,100
Total net tonnage clearances—	
Foreign.....	1,577,695
Coastwise.....	525,900

14. REMARKS.

The port is under the control of the municipality. The construction, maintenance, and operation of the municipal docks are controlled by the department of public works, while the enforcement of harbor regulations is in the hands of a harbor master, who is an official under the mayor. In immediate charge of the municipal docks is the superintendent of docks, who is appointed by the commission of public works and is assisted by 10 employees.

Funds for harbor improvement and wharf construction are provided by issues of bonds or by appropriations made by the city council from the general funds of the city. The net income from the municipal terminals is placed in a sinking fund to retire harbor improvement bonds. The city has power to purchase and condemn property for water terminals and to operate terminal facilities, such as warehouses, railroads, etc.

"Responding to the demand for additional port facilities, the voters of Pierce County, wherein Tacoma is situated, elected three commissioners November 5, 1918; and they are now, through their engineer, preparing a comprehensive plan of port development, as the State law creating port districts requires. This plan in the month of May will be submitted to the people for adoption and at the same time a bond issue of two millions or more will be authorized. And thereafter a tract of 240 acres of tideland adjoining the terminal of the Chicago, Milwaukee & St. Paul Railway will be acquired, having in

mind a development in the future that would provide berthings for 45 ships 600 feet long. The immediate development will comprise two piers—one an open pier and the other with freight shed and warehouse equipped with the most efficient facilities for loading and unloading that can be purchased. The latter will be 1,400 feet long. ✓ A cold-storage plant will be provided. The general plan contemplates a thousand-foot waterway that will divide the tract in two, leaving a thousand feet of filled land and slips on either side. The site of this development is pronounced ideal."

PORT AND TERMINAL FACILITIES, TAMPA, FLA.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Channel minimum depth 24 feet at mean low water.
Minimum width 200 feet, length 40 miles to Gulf of Mexico.
An appropriation is available for a 27-foot project; work has begun.
Tidal range on entrance bar $1\frac{1}{2}$ feet.
Tidal range in harbor 2 feet.

2. BERTHING CAPACITY IN LINEAR FEET.

Twenty-four feet depth, 7,650 linear feet; 25 feet depth, 7,000 linear feet.

Hillsboro Bay: Tampa Northern Wharf, 1,150 feet long, 24 feet water depth.

Seaboard Air Line Railway wharves, on Seddon Island, 2,900 feet, 24 feet depth; Hendry & Knight terminals, 2,600 feet, 24 feet depth; Swann terminals, 1,000 feet, 24 feet depth. (In addition, practically entire estuary frontage of approximately 7,000 feet, on which no wharves are built at the present time, 1,400 feet of which is city-owned property.)

Hillsboro River: Seven hundred feet, 12 feet depth.

Old Tampa Bay: Port Tampa docks, 7,000 feet, 25 feet depth.

3. NAMES OF RAILROAD LINES SERVING PORT.

Atlantic Coast Line Railway and Seaboard Air Line Railway.

4. DRY-DOCKING FACILITIES.

Under construction, 2,500-ton marine railway.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

There are various anchorage basins in harbor. At the junction of the two arms of the bay there is an area of about 8 square miles, with a controlling depth of 25 feet.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Water used by ships for boiler purposes is taken from the Purity Springs Water Co., a spring water of natural flowing spring, 7 miles from docks, connected with 6-inch main to water front. Capacity of

spring 30,000 gallons per hour, and forced flow will provide 20,000 gallons per hour through pipe line. Analysis shows 99.98 per cent pure soft water, especially adapted for drinking purposes and for boilers.

The water of the city waterworks system is considered somewhat hard for boiler purposes, but is excellent for drinking.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

The Tampa Electric Co., a corporation operating electric light and power plant, furnishes current for the city, 10,000 horsepower available, operated by steam, power plant in city using fuel oil for fuel; characteristics of main transmission line, 60-cycle, 2-phase, 2,300 volts, and current delivered to power consumers, 220 volts, 2-phase, 60-cycle, alternating current.

8. COALING FACILITIES.

Tampa Coal Co., storage capacity 10,000 tons, one coal hoist to handle either coal for bunkering or discharging, capacity of 500 tons per day. Seaboard Air Line Railway coal hoist, capacity 1,000 tons per day. Atlantic Coast Line Railroad coal hoist, capacity 2,400 tons per day, with storage capacity of 15,000 tons.

9. FUEL OIL FACILITIES.

This harbor has storage facilities of the Standard Oil Co., Gulf Refining Co., National Petroleum Co., Mexican Petroleum Co., Texas Oil Co. The fuel oil storage facilities combined equal 500,000 barrels.

This in addition to storage facilities for Diesel engine oil and gasoline. Oil received by tank steamers and barges delivered from ship to storage or from tanks to ship by pipe line. Capacity about 3,000 barrels per hour.

10. CRANE AND DERRICK FACILITIES.

At the present time, outside of the well-equipped phosphate elevators and coal hoists, there is little power operated machinery in use for loading or discharging facilities.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

The Mallory Steamship Co., from New York and Mobile, Ala., 10 and 11 day sailings. Gulf & Southern Steamship Co., to and from New Orleans, four sailings a month. Peninsular & Occidental Steamship Co., to and from Habana, Cuba, twice a week, touching at Key West, Fla.

Prior to the war the Southern Steamship Co. operated 10-day sailings between Philadelphia, Tampa, and Galveston, the Mallory Line operated sailings every week, and the Gulf & Southern had sailings every week. Mallory Line is expected to resume sailings April 1, 1919.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

None.

13. VESSEL CLEARANCES.

Information not furnished.

14. REMARKS.

The administration of the port of Tampa is vested in a board of commissioners consisting of seven members, with wide powers for control and improvement. It is estimated that the port facilities can handle 50 per cent more than their present business.

Tampa is particularly well equipped for the handling of phosphate rock, which is the main single item of outgoing business.

It has a considerable business with Cuba, particularly importation of tobacco, in which it ranks as one of the leading ports of the United States.

There is freight transfer from rail to ship, generally through intervening warehouses; also rail to warehouse and thence to ship. There is 113,913 square feet of warehouse and 129,482 square feet of open storage at terminals.

PORT AND HARBOR FACILITIES, TEXAS CITY, TEX.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Texas City is on the mainland of Texas about 8 miles northwest of Galveston. The length of channel connecting Texas City with Galveston is approximately $6\frac{1}{2}$ miles. The channel width is 300 feet. Depth of water in the channel, 29.6 feet at mean low water, which is the controlling depth of the Gulf.

Texas City is 12.5 miles from the Gulf of Mexico.

The mean range of tide within the harbor is 18 inches.

The mean range of tide on entrance bar is 3 to 4 feet.

2. BERTHING CAPACITY IN LINEAR FEET.

The total berthing capacity in linear feet is 5,765, with a normal depth of water of 30 feet at each berth. The pier and terminal property at Texas City is owned by private individuals, and operated by the Texas City Terminal Co. They consist of piers A, B, C, D, E, and O, each of which is covered, tops and sides. All piers are served by railroad tracks. The car capacity adjacent to the piers is 258. Warehouse "C" is equipped with an Elwell-Parker tractor.

3. NAMES OF RAILROAD LINES SERVING PORT.

The only railroad that enters Texas City is the Texas City Terminal Co., which owns about $6\frac{1}{2}$ miles of main track, and 26 miles of sidings. It makes connection with the following lines:

- (a) Galveston, Harrisburg & San Antonio Railway.
- (b) Missouri, Kansas & Texas Railway of Texas.
- (c) International & Great Northern Railway.

- (d) Gulf, Colorado & Santa Fe Railway.
- (e) Galveston, Houston & Henderson Railway.

These five steam roads are generally known and described as Galveston Bay lines. Under trackage arrangement which the Bay Lines have with the Texas City Terminal Co., their lines extend to and from the port the same as if their own rails were built into the city and the docks.

4. DRY DOCKING FACILITIES.

There are no dry docking facilities at Texas City.

5. ANCHORAGE AREA AVAILABLE WITHIN THE HARBOR.

Anchorage space within the harbor with 30 feet depth at mean low water for five standard size ships.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Ample supply of fresh water for boiler and drinking purposes, available in any quantities desired.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Power house within 300 feet of water, potential 650 horsepower, with both direct and alternating current service; 2,300-440-220-110 volt. Power house owned and operated by Texas City Transportation Co.

8. COALING FACILITIES.

One large coal pier with bin storage capacity for 40,000 tons, capable of handling 1,500 tons per 24 hours.

9. FUEL OIL FACILITIES.

Equipped with oil dock, pipe lines, and pumping station for discharging of tanker boats and for loading out for bunkering purposes or commercial outbound in bulk; storage capacity, 175,000 barrels, and bunkering capacity of 1,000 barrels per hour.

10. CRANE AND DERRICK FACILITIES.

One McMyler hoist and one Brownhoist, each 10-ton capacity. Land warehouses used for storage are equipped with 2-ton electric overhead cranes. The overhead cranes in warehouse "C" are equipped with lifting magnets.

11. STEAMSHIP LINES AT PRESENT USING PORT REGULARLY.

Ward Line, Pierce Navigation Co., Wolvin Line, South Atlantic Line, and Southern Steamship Co.

12. GRAIN ELEVATORS AND STORAGE FACILITIES.

Public grain elevators built, 1910. All concrete and metal construction; direct rail connection; electrically operated; capacity, 500,000 bushels; capacity for receiving and unloading from cars, 60 cars in 10 hours; equipped with dryer, cleaners, and oat clipper cleaner. Rate of delivery to vessel, 12,000 bushels per hour.

13. VESSEL CLEARANCES.

	Total number of vessels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Fiscal year ending June 30, 1914.....	334	135	211,569	107,243
Fiscal year ending June 30, 1918.....	133	118	171,306	99,719

14. REMARKS.

There are three cotton compressors on the property of the Texas City Terminal Co. These compressors are connected by monorail telfer system for the delivery of cotton to ship side.

Port administration: All the port facilities are privately owned and controlled, and no municipal control is exercised.

PORT AND TERMINAL FACILITIES, WILMINGTON, N. C.

1. CONTROLLING DEPTH OF WATER TO THE SEA.

Channel to the sea has a depth of 26 feet at mean low water, with a maximum width of 400 feet, minimum 150 feet. Distance from the sea, 30 miles. Tidal range on entrance bar, 4.1 feet. Tidal range within harbor, 2.5 feet.

2. BERTHING CAPACITY IN LINEAR FEET.

	Linear feet.	Depth of water (feet).
Atlantic Coast Line R. R.:		
General cargo wharves.....	2,523	26-30
Coal dock.....	60	26
Standard Oil Co. dock.....	175	26
(Available warehouse storage space on wharves, 89,000 square feet.)		
Seaboard Air Line Ry.: General cargo wharves.....	2,355	25-27
(Available warehouse storage space on wharves, 180,834 square feet.)		
Clyde Steamship Co.....	416	26.5-27
(Available wharf shed inclosed storage, 54,912 square feet.)		
Champion Compress & Warehouse Co.....	1,400	24-26
(Available storage, "3 large warehouses" adjacent to wharves.)		
Wilmington Compress & Warehouse Co.....	436	26-29
(Available wharf shed and warehouse storage, 200,000 square feet.)		
Schooner berths.....	1,000	16-18
Total.....	8,365	.....

The wharves on the west bank of the river (except those of one cotton compress and certain fertilizer plants), aggregate in length 1,055 feet, but are in poor condition and are, generally speaking, without warehouse facilities.

3. NAMES OF RAILROAD LINES SERVING PORT.

Seaboard Air Line Railway, Atlantic Coast Line Railroad, Wilmington, Brunswick & Southern Railroad, the last-named being a short line extending from Wilmington to Southport, N. C., a distance of 30 miles.

4. DRY DOCKING FACILITIES.

There are no dry docks at this port. One marine railway of 1,000 tons capacity owned and operated by the Wilmington Marine Railway Co., built in 1912, with 10 feet 6 inches of water forward and 14 feet 6 inches aft, capable of accommodating a vessel up to 250 feet in length.

5. ANCHORAGE AREA AVAILABLE WITHIN HARBOR.

Anchorage is in the Cape Fear River and comprises about 210,000 square feet with depth of 26 feet at mean low water.

6. FRESH WATER FOR BOILER AND DRINKING PURPOSES.

Water for boiler purposes is obtained from the Cape Fear River, is furnished to vessels by water boat or from pipes on wharves and supply is unlimited. Drinking water is furnished by artesian wells, supply limited and cost aboard vessels about 1 cent per gallon.

7. QUANTITY AND CHARACTERISTICS OF ELECTRIC CURRENT AVAILABLE.

Tidewater Power Co. furnishes electric power produced at their main plant on Ninth Street, between Orange and Ann Streets, alternating current, 1,000 to 1,500 kilowatts; 2 or 3 phase and voltage depending on character of the load.

8. COALING FACILITIES.

All coal bunkering is done by means of barges and at the present time is limited to about 1,000 tons per day of 24 hours, barges being of about 200 tons capacity provided with suitable hoisting machinery. Maximum storage is about 7,000 tons, although normal storage is only 600 tons. The grades handled are Pocahontas and New River, it being difficult, however, to always get these grades of coal, there being no pooling arrangement, such as exists at New York and Philadelphia. The source of supply is distant 511 miles via Norfolk & Western Railroad, and 567 miles via Seaboard Air Line Railroad. There are two storage yards belonging to the Springer Coal Co., with capacity of 7,000 tons each, which are located on the river front and from which coal can be wheeled on to lighters or barges. The Atlantic

Coast Line Railroad and Seaboard Air Line Railroad each has a trestle extending over the river from which coal may be dumped from the cars on to lighters; the capacity of the coaling trestles will permit the delivery of 2,000 tons daily in the harbor to ships, but the capacity of the facilities transferring the coal to vessels is limited to 400 to 500 tons daily. The Diamond Steamboat & Wrecking Co. has one barge which is capable of delivering and trimming about 20 tons per hour to the average built ship, with side bunkers and saddle backs, and they are now (Feb. 13, 1919) fitting another barge of like capacity. Most of the bunkering is done alongside the wharves while ships are taking or discharging cargo. The rail terminals have about 16 or 17 miles of sidings which can accommodate about 500 cars on storage.

In addition to the facilities at Wilmington Harbor proper, there are bunkering facilities at the terminal of the Wilmington, Brunswick & Southern Railroad, distant 35 miles south of Wilmington at the mouth of the river. There is a coaling trestle 336 feet long, extending out to water 26 feet deep, storage capacity of from 600 to 800 tons, and bunkering delivery through chutes of uncertain amount, depending on class of vessel. There is storage capacity of 1,000 tons on trestle and 2,500 tons on adjacent railroad yards, from which 50 cars of coal can be shifted to trestle without delay. Steamers requiring coal come either to the head of the wharf or alongside without interfering with barges taking coal through the chutes.

9. FUEL OIL FACILITIES.

No bunkering oil is handled at this port at the present time (1918-19), storage tanks being used almost entirely for kerosene and gasoline. There are three 10,000-barrel tanks for gasoline and one 25,000-barrel tank for kerosene. There is a prospective development of these storage facilities in the way of the construction of two 32,000-barrel tanks. Pipe lines to the tanks consist of two 6-inch lines. All oil comes in by steamer and if it were intended to do any oil bunkering it would be necessary to install an entire new set of tanks and pipe lines.

10. CRANE AND DERRICK FACILITIES.

There are at present (February, 1919) no mechanical facilities worthy of mention, and the handling of cargoes is accomplished by manual labor.

11. STEAMSHIP LINES AT PRESENT USING THE PORT REGULARLY.

There are no steamship lines using this port regularly. The South Atlantic Maritime Corporation is arranging to establish service to the West Indies, Central and South America.

12. GRAIN ELEVATOR AND STORAGE FACILITIES.

There are no grain elevators or grain storage facilities.

13. VESSEL CLEARANCES.

	Total number of vessels cleared.		Total net tonnage clearances.	
	Foreign.	Coastwise.	Foreign.	Coastwise.
Fiscal year ending Dec. 31, 1914.....	18	112	(1)	(1)
Fiscal year ending Dec. 31, 1918.....	6	65	(1)	(1)

¹ Not furnished.

14. REMARKS.

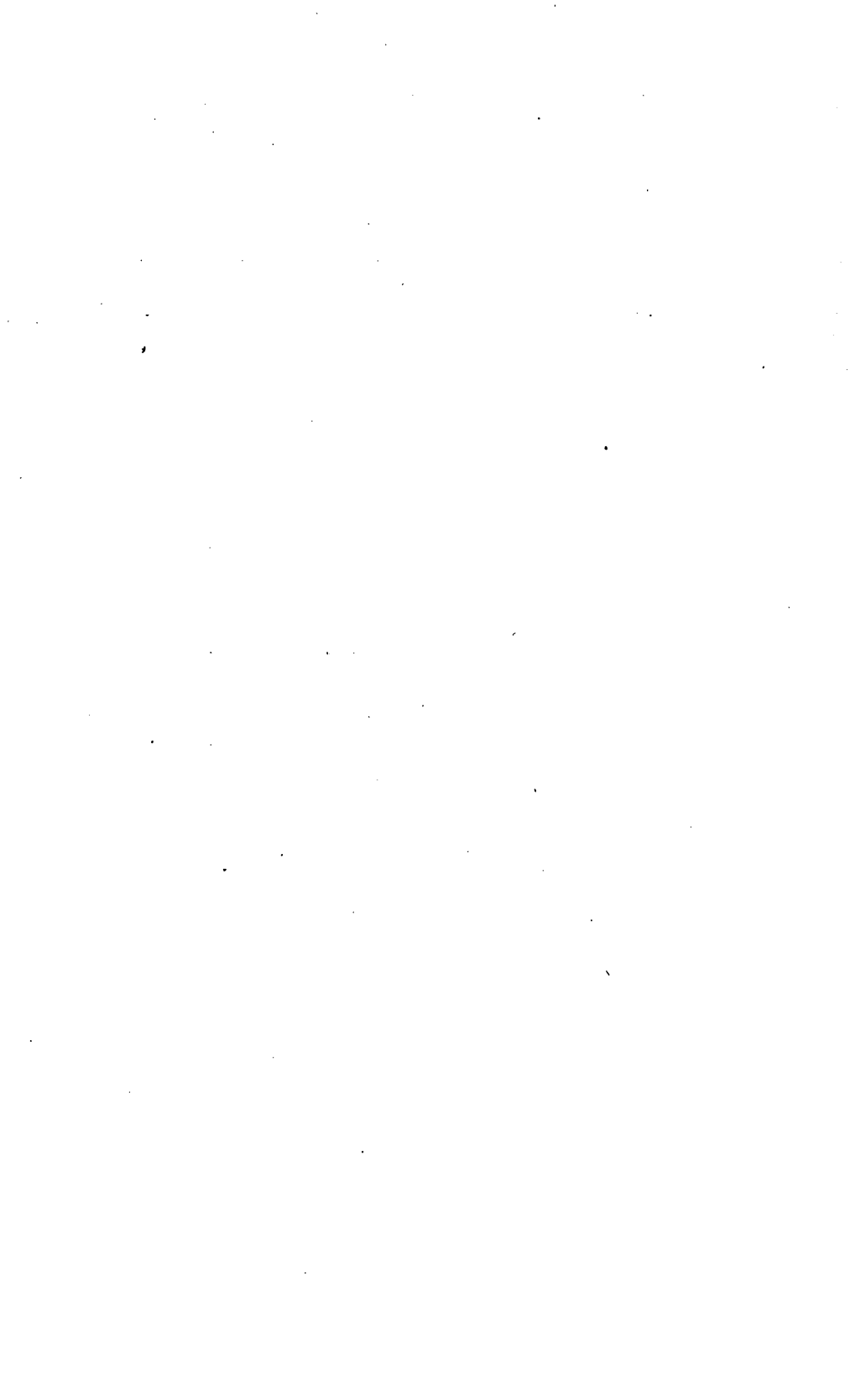
Cotton is the principal commodity handled over the wharves of Wilmington; it comprises practically all of the exports. There are four cotton compresses. Fertilizers and fertilizer materials form the bulk of the imports. There is a considerable coastwise trade; inbound in dry goods, groceries, and hardware, outbound in cotton and naval stores.

About 3 miles of frontage are at present available on the east bank, or city side, of the river. On the west bank several miles of frontage could be made available, if required, but the land is mostly low and unused.

The city of Wilmington owns seven wharves, which are located at street ends and have a total frontage of 350 feet. One is used in connection with the waterworks pumping station, another is used by the city fire boats, another is leased to the Champion Compress & Warehouse Co., while the remaining four are open to the public without charge and are used chiefly by small craft.

The administration of the port of Wilmington is vested in a State board called the board of navigation and pilotage for Cape Fear River and bars. This board, which is appointed by the governor, consists of five members, who serve without compensation for a term of four years. As a rule three of the commissioners are residents of Wilmington and two of Southport.

The board of navigation and pilotage has no control of the several municipal wharves. These wharves were built and are maintained by the municipality and their management is, therefore, one of the duties of the city commissioners.



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